

# ADVANCE MACHINERY

Engines  
Separators  
Huskers  
Wind Stackers  
Feeders

ADVANCE THRESHER CO.  
BATTLE CREEK, MICH., U. S. A.





YEAR BOOK  
*of*  
ADVANCE  
THRESHING MACHINERY

Number 23, 1909-10

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ADVANCE THRESHER COMPANY

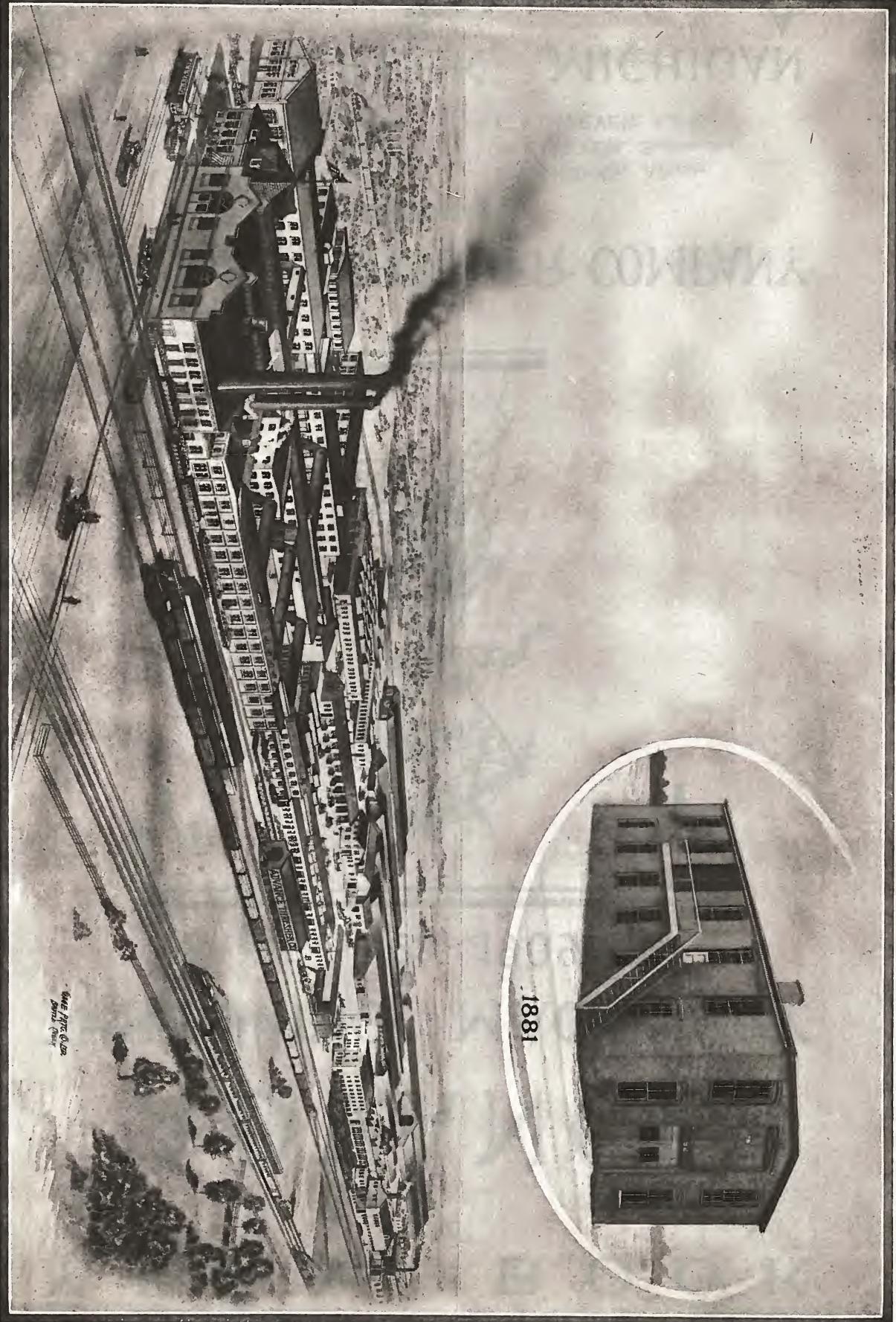
INCORPORATED

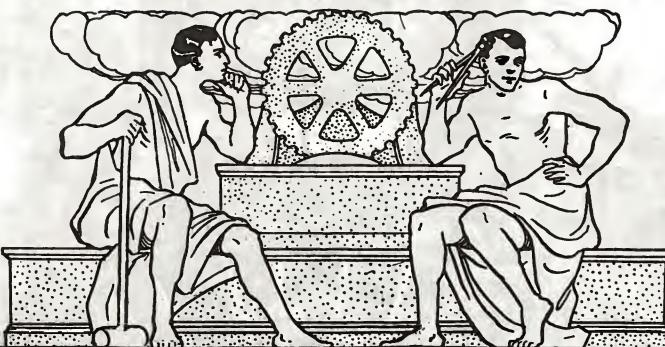
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BATTLE CREEK, MICHIGAN  
U. S. A.

1909





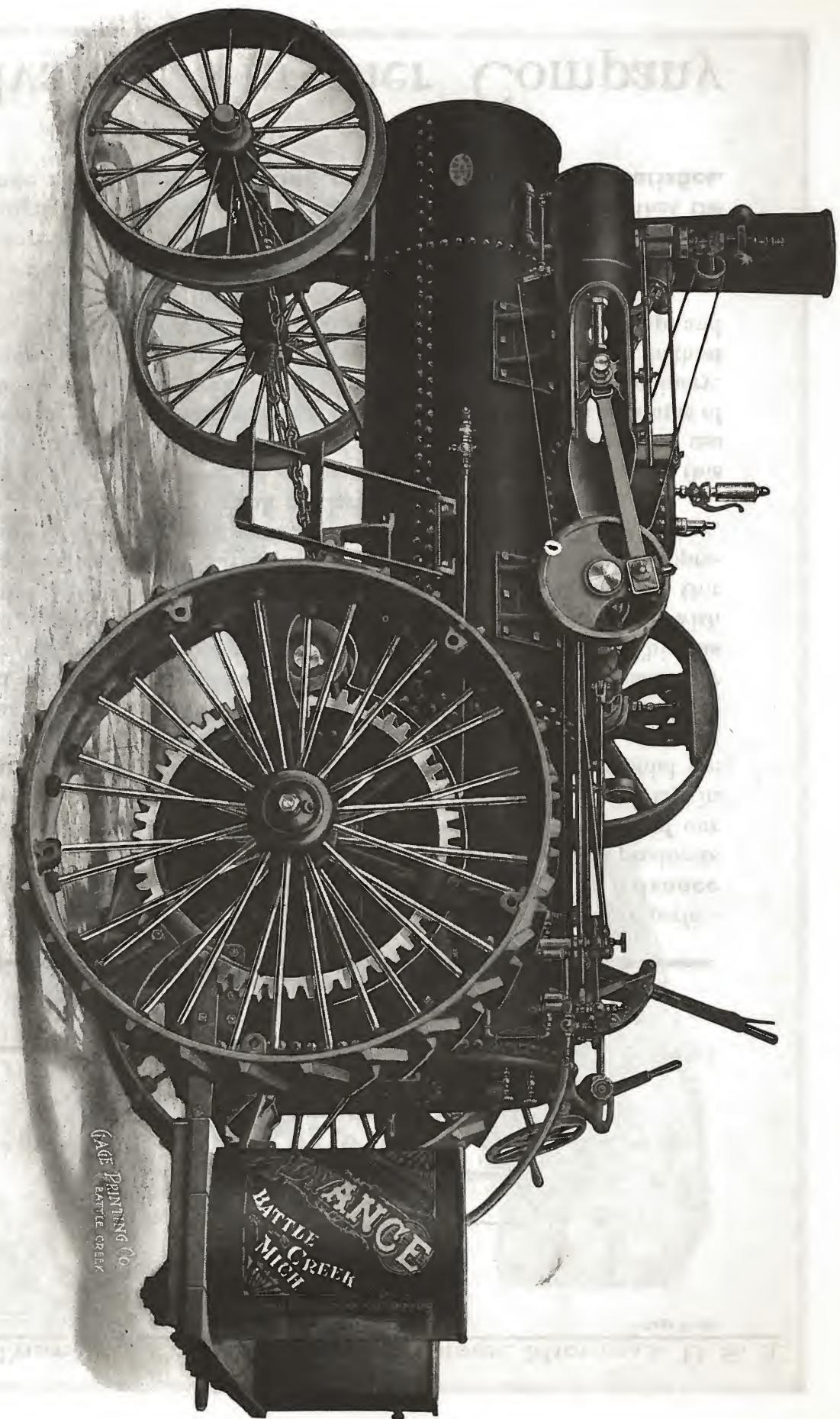
**W**E CAN offer no better evidence of the high mechanical perfection, excellent efficiency and operative economy of **Advance machinery** than the fact that we are one of the largest producers of threshing machinery in the world, and have many thousands of our machines in active operation on every part of the globe, every day in the year. In addition to this silent but most powerful testimonial are many enthusiastic expressions of satisfaction which we receive annually from our thousands of customers. These complimentary expressions have inspired and prompted us to leave no effort untried to make our machinery the best that could be produced and to continue to merit them. This has required us to constantly experiment at the factory and then follow with exhaustive field trials, resulting in many valuable improvements. Our immense sales show conclusively that our efforts have been fully appreciated and welcomed. This naturally places us in the position we occupy, namely, **in the foremost rank of thresher manufacturers.**

But it is not alone on account of our many new ideas that we merit this position, but it is as well on account of the high grade materials we use and the care we exercise in seeing that every machine is an example of the skill of first class workmen. We do not make cheap machinery. We believe that the name "**Advance,**" as the symbol of the highest grade of machinery, will live long after the memory of cheap and shoddy goods.

In the following pages, we have been able to touch upon but a few of the many superior features of our machinery, but hope that you will read these pages carefully and believe that you will be convinced that the **Advance is the money making machinery that really satisfies.**

Respectfully,

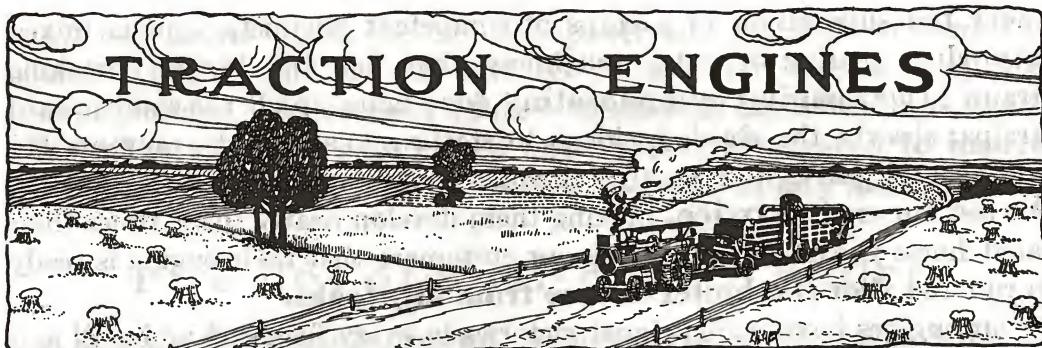
**Advance Thresher Company**



This is an ideal engine for general work. Burns either coal or wood. We rate it 16 horse-power. We have them in operation in every territory and giving perfect satisfaction in connection with Advance separators up to 56-inch.

We also mount it on a Straw-Burner Boiler.

PAGE PRINTING CO.  
BATTLE CREEK



SATISFACTORY results cannot possibly be obtained from a traction engine unless it is constructed of the very best materials, by good workmen, and is designed for the duties it is called upon to perform. No careful buyer can afford to overlook these points when making a purchase.

In building the Advance engine we use only the very best grade of materials that we are able to obtain, and every piece entering into its construction is carefully inspected by experienced workmen to make sure that it is up to our standard. Our workmen have spent the better portion of their lives in our employ and are specialists in this line, and each piece turned out is carefully made and machined to fit perfectly into its place when ready to be assembled.

The Advance engine is an easy steamer, with the proper amount of heating surface and ample steaming space, and our furnace construction extracts the greatest amount of heat from the fuel. **Our engine is the most economical in water as well as fuel, and consequently our boilers are much longer lived, due to far less evaporation and resultant small amount of sediment.** They are simple, easily understood and operated, and as plain as it is possible to make them. There are no parts to continually get out of adjustment and an expert engineer is not required to keep them in order. They will stand all the rough and tumble abuse due to exposure, to the hardest roads and heaviest pulls, and yet they are always ready no matter what the conditions.

The design of our boiler is patented, and while others have attempted to imitate them we have never known of a traction engine boiler being made that approached the Advance as an easy steamer, made of as thick plates, and as well braced and secured throughout.

All shafting is extra large and strong with an ample margin of safety to cover any excessive strain due to extraordinary conditions of roads or loads, and is carried in boxes with extra long bearings. All brackets have large bearing surfaces with many screws, and rigidity is further assured by proper bracing. Advance gearing is made of iron and steel, the mixture being

under the supervision of a corps of competent chemists, and is mixed to produce gearing of extra toughness, that has the highest breaking strain. Our **cushion compensating gear** takes up all the sudden hard strains, absorbs the shock incident to starting heavy loads, prevents the breakage of gears, and gently transmits motion to the driving wheels. We test our engines **twice**, making them develop nearly three times their rated horse power. This insures our customers that their engine is ready to run and **that the boiler is free from any leaks.**

Our engines have scored signal victories in every field and under all and the most adverse conditions. The details of construction which follow show clearly why the **Advance engines have come to be known everywhere as the best, simplest, strongest, longest lived, and most economical and serviceable engines made.**

## B o i l e r s

**T**HE first cost of an engine may be cheapened by reducing the cost of the boiler through the use of poorly selected material and unskilled labor, but it is a dangerous experiment and poor economy for the purchaser. The boiler is the one part above all others that should not be cheapened. A poorly constructed boiler consumes more fuel and water, is short lived, and dangerous to life and property. It is expensive to repair, and repairs are seldom satisfactory. It furnishes the power for operating the machinery and propelling the engine over rough roads, **and is the foundation of the whole structure.** The success or failure of an engine depends upon the boiler — we know it, and spare no expense in the construction and testing of our boilers. **Advance High Pressure Boilers** have a world-wide reputation for durability and steam producing qualities, and are made with an extra large heating surface which **supplies all the steam required by the engine mounted upon it when developing its maximum power on the road, before the plow or under the belt.** We build the locomotive type — of heavy steel plate, double riveted and stayed throughout, and designed to withstand all the severe strains incident to the work of a traction engine.

Advance boilers are made of the very best open hearth homogeneous steel plates of 60,000 pounds tensile strength. Flue sheets, throat sheet, and dome head are  $\frac{1}{2}$ -inch plate; shell and all other flanged sheets are  $\frac{5}{16}$ -inch plate; the outside fire box sheet is  $\frac{3}{2}$ -inch plate; the rivets  $\frac{11}{16}$ -inch in diameter, and stay bolts  $\frac{7}{8}$ -inch in diameter.

All our boilers up to the 30 horse-power size are built to carry 150 pounds pressure and our 30 and 35 horse-power boilers carry 160 pounds pressure. **After the engine is mounted, each boiler is fired, allowed to cool and again fired and thoroughly tested to insure its being up to standard and free from leaks of any kind.**

## Fire Box of Coal-Burner Boiler

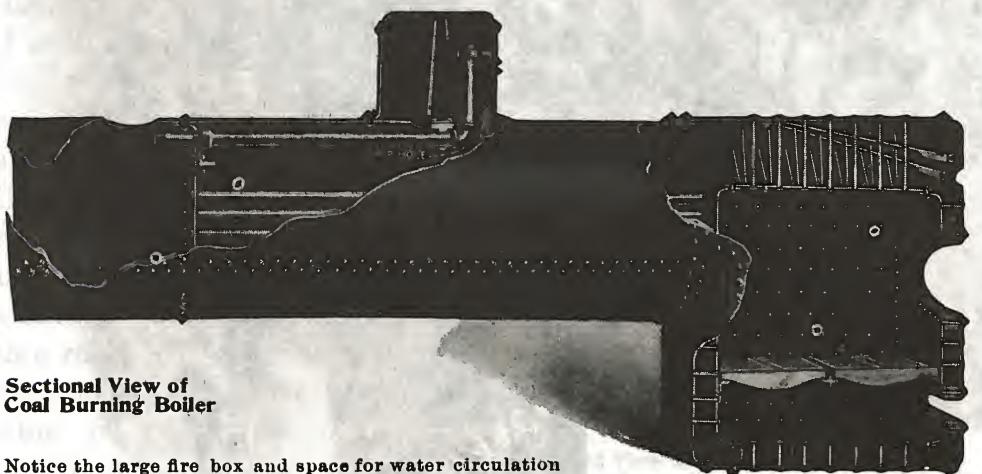
It is of the **flat bottom, round corner style**, which design tends to brace it and makes strong seams. There is ample space under the grates for ashes and the proper amount of air for good combustion. Liberal space is provided between the fire box and the shell of the boiler for the free circulation of water and ample room below the grate line for the collection of mud and sediment as will be noticed by referring to the cut below showing a sectional view of the boiler.

## Crown Sheet

The crown sheet slopes rearward which facilitates circulation of water and cleaning, and **also insures its being covered with water when going down hill.** Security is assured by a fusible safety plug in the front end of the sheet which will melt in case of low water, allow steam to escape into the fire box and put out the fire.

## Flues

We use seamless cold drawn steel tubes made on our own specifications. The material has a smooth surface to which scale does not adhere readily, and the low percentage of phosphorous and sulphur contained renders



Sectional View of  
Coal Burning Boiler

Notice the large fire box and space for water circulation  
and settling of sediment, also hand holes for cleaning



This engine is noted for its economy and efficiency. It is a Compound Coal- and Wood-Burner. We rate it 18 horse-power.

This is a favorite engine in all sections of the country. Note the strength of the gearing.

We also make it in a Straw-Burner.

them soft and pliable, and not liable to fracture while being worked. The flues are spaced to allow free circulation of water and easy passage of steam between them to the steam space in the top of the boiler, and the dimensions (see page 33) give a heating surface which allows quick and easy steaming.

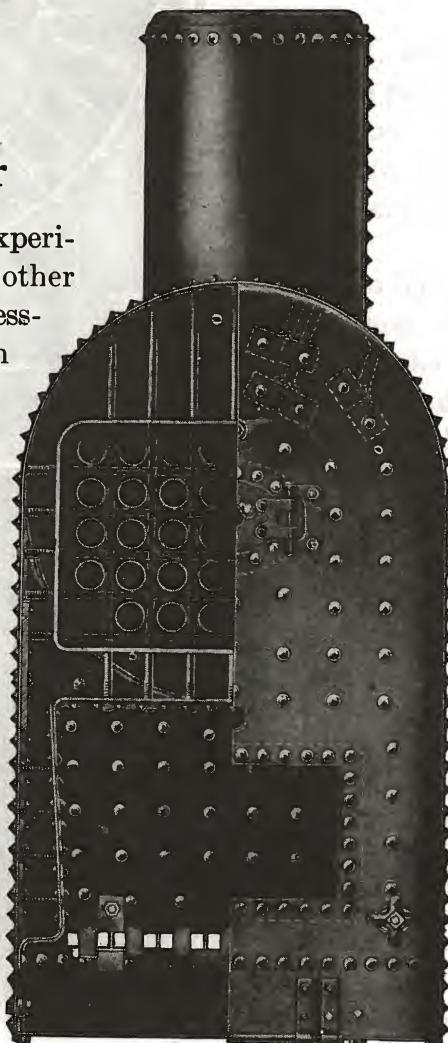
## **Smoke Box**

Smoke has a tendency to travel through the upper rows of flues. By an extension smoke box and a cast iron baffle plate, we retard the draft in the upper row of flues and force the heat through the lower flues, giving the boiler a more uniform temperature and lessening the amount of coal used and the labor in firing. In firing-up the baffle plate may be swung back giving a free passage to the smoke and a straight draft.

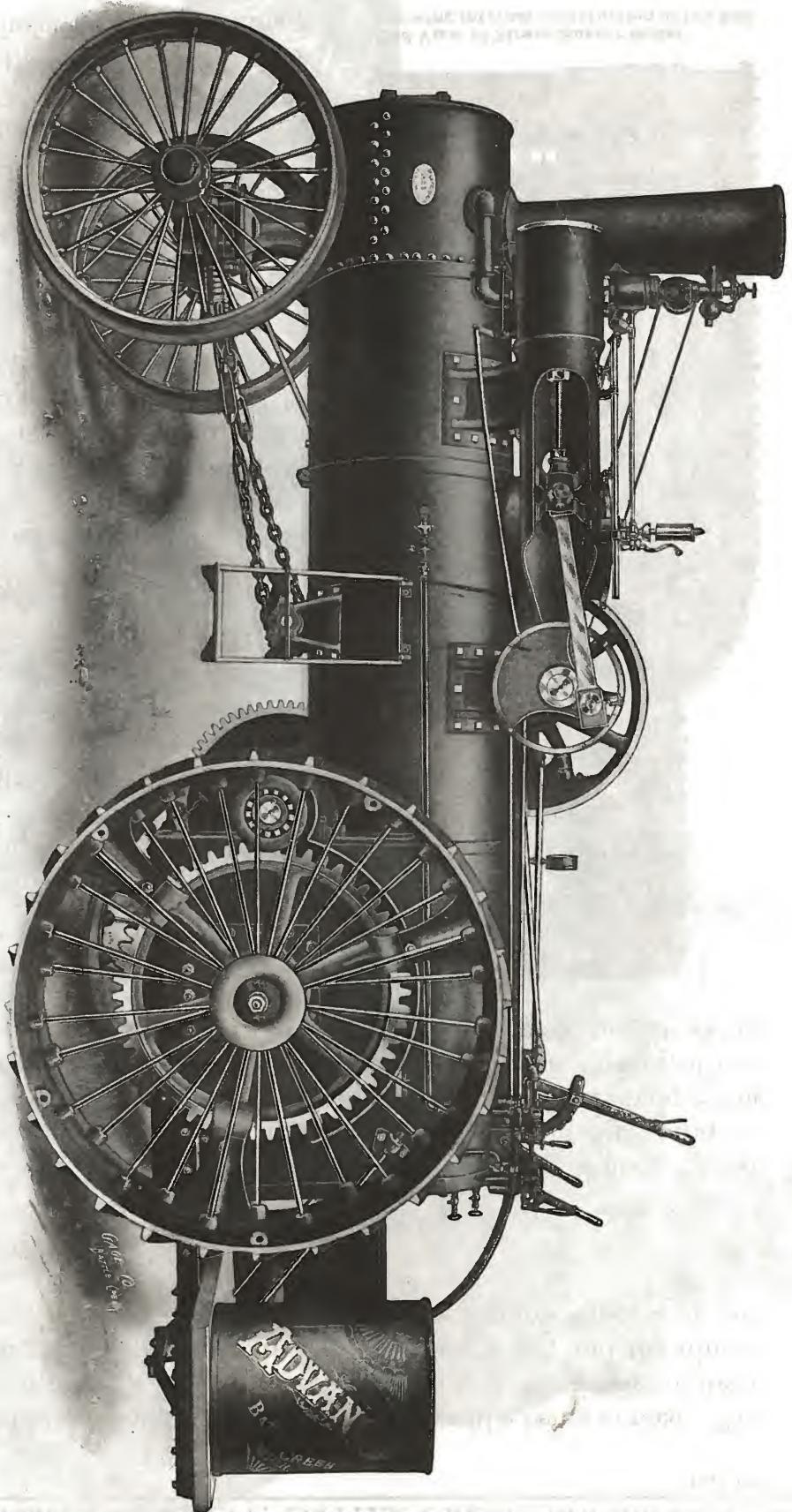
## **Advance Straw-Burner Boiler**

It is admitted by all who have had experience with our engines and those of other makes, that the Advance is the most successful straw burner built. The features in which this boiler differs so radically from others and which made it so successful are covered by our patents and imitators have fallen far short of the original.

By referring to the cut showing the sectional view, it will be noticed that fuel and draft are not taken from the same place, but from opposite ends of the fire box. This is perhaps one of the most distinctive features of our boiler. The draft entering by the door marked "D" underneath the grates "G" forces the flames against the straw, instead of away from it, with a resultant uniform and intense combustion and is not affected by feeding in the straw. The same principle is involved as in burning a



**End View of Straw-Burner Boiler  
Showing internal construction of fire box**

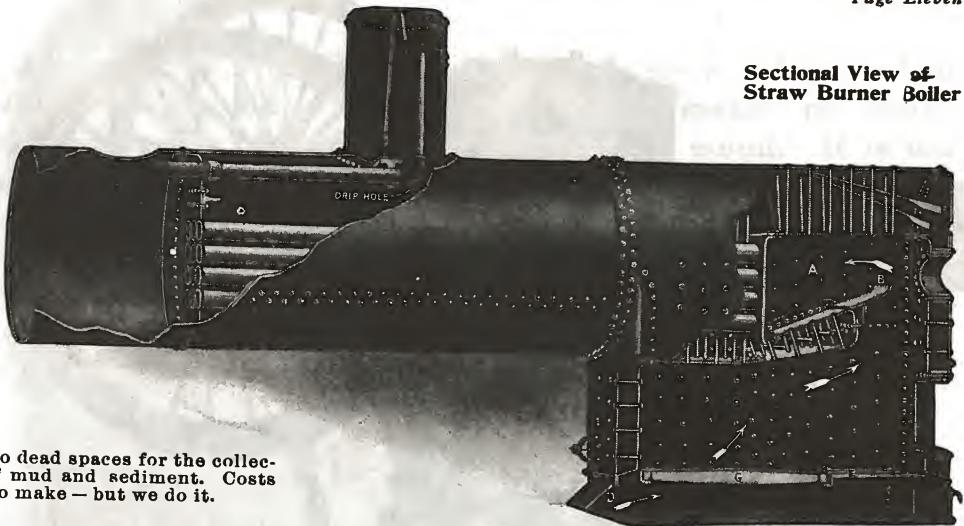


This is one of our best selling engines. We rate it 20 horse-power. Coal- or Wood-Burner. This is a powerful engine on the road and in the belt, and at the same time it is not too heavy nor too wide for roads and bridges.

Note its simplicity and freedom from intricate troublesome parts.

We also make this engine in the compound, for conditions requiring greater power, without additional weight.

Sectional View of  
Straw Burner Boiler



NOTE—No dead spaces for the collection of mud and sediment. Costs more to make—but we do it.

match; if you wish a match to burn quickly, you will not hold it with the lighted end up but rather with the lighted end down so that the flame will run along the stem. To insure forcing the flame against the straw, a dead plate "E" is placed in the front end of the fire box to prevent the draft from taking a **short cut** under the grates, and into the combustion chamber "A".

In order to secure proper combustion of any fuel, it is necessary to have the right amount of space in the combustion chamber. The method of providing this space is unique and found only in the Advance boiler. **Instead of putting in an arch of fire brick, a water leg is inserted just above the fire door and the lower end of the flue sheet, and the draft forcing the flame against the side of this water leg makes it very hot and a great source of steam generation,** and the steam generating rapidly in the water leg creates a violent circulation of water which scours and keeps it perfectly clean. To further deflect the flame to the back end of the fire box and up into the combustion chamber "A" there is a cast iron baffle plate "B" placed on the water leg. This insures perfect combustion of all small particles of straw and also provides a large area around the fire box for generating steam.

The peculiar shape of the fire box in this boiler and the liberal use of stay bolts makes it exceptionally strong and efficient. The flues in the straw-burner boiler are somewhat larger than those of the coal-burner, but with the exception of the flues and the fire box the boiler is constructed along lines similar to the coal-burner. **A ferrule is provided in the smoke box end which enables us to make the holes in the flue sheet larger than the tubes themselves, and allows the flues to be easily removed even though badly encrusted with lime and scale.**



This is the geared side of our 20 horse-power engine. Note the cushion compensating gear and large dome.

Made as light as possible, yet strong and durable.

We now compound this engine. This gives a large increase in power, with ample  
steaming capacity and without the usual increased weight.

GAGE MFG. CO., LTD.  
BATTLE CREEK, MICH.

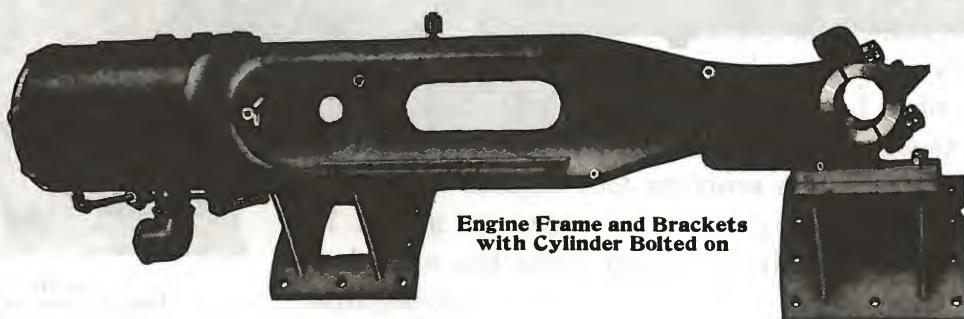
The Advance straw-burner boiler is built to burn straw and it is a fact that these boilers burn straw where other makes of straw-burner boilers are compelled to burn coal or wood. It is not an uncommon sight to see an Advance straw-burner at work in the same neighborhood with other makes of straw-burners, the Advance successfully burning its natural fuel, straw, while the others are compelled to use coal or wood. At the same time there is no boiler more efficient than the Advance straw-burner for burning either coal or wood. Simply change the grate.

## **Oil-Burners**

In all parts of the world where oil is found in such quantities as will permit of its use for fuel, both our coal- and straw-burner engines are in use as oil-burners. In California, Texas and Kansas a large number are in use almost daily, and have proven the most satisfactory traction oil-burners built. Upon order we fully equip our engines as oil-burners, and in such a manner as to render them efficient and economical in the consumption of fuel.

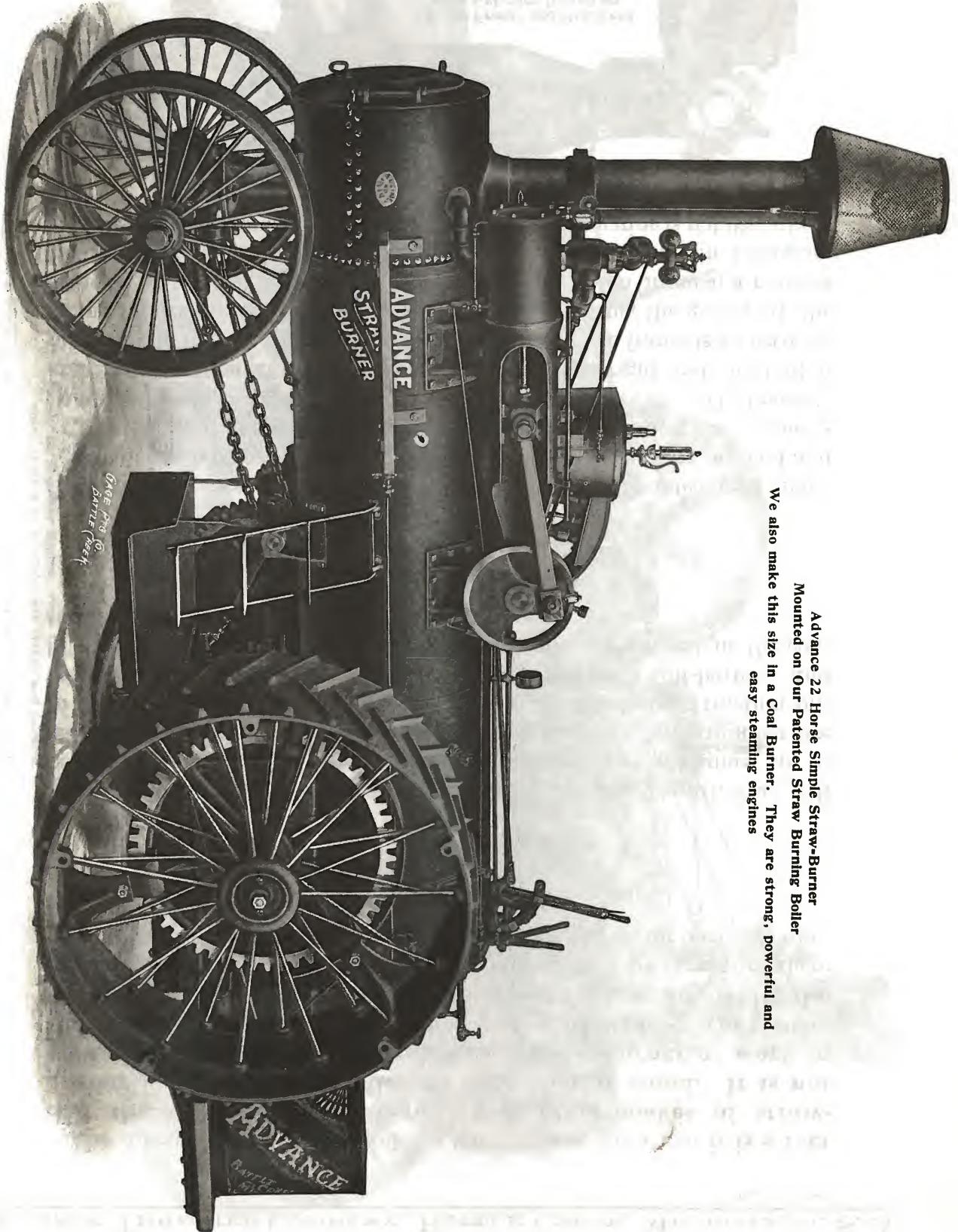
## **Engine Frame**

**T**HE Advance engine is of the side crank style, mounted on a frame of the box girder pattern. The cylinder is fastened to one end and the main bearing of the engine is on the other end. The frame is bolted to brackets which are bolted to the shell of the boiler. The brackets and frame are planed to fit perfectly and provide a rigid and substantial mounting. Perfect alignment of the cylinder and the frame is secured by facing the frame for attaching the cylinder, and boring the guides at the same time. The cap on the frame bearing is put on in such a manner that all the wear is on the cap and not upon the box, and in taking up any wear the alignment of the crank shaft with the engine is not disturbed.

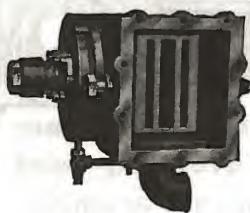


**Advance 2 1/2 Horse Simple Straw-Burner**

We also make this size in a Coal Burner. They are strong, powerful and  
easy steaming engines



## Cylinder



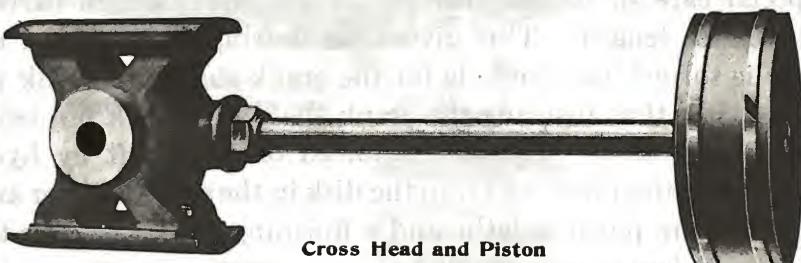
**Simple Cylinder  
Unmounted  
Showing Ports**

The cylinder of our engine is **bolted to the end of the frame**, and with the frame is faced and drilled to a templet, making it practically impossible for the cylinder to get out of alignment with the frame. **Mounting our cylinder as we do allows for expansion and contraction without in any way affecting the connection.** The cylinder is made of hard close-grained cast iron, and

the steam chest being an integral part of the same enables us to get short steam ports, resulting in the clearance of our cylinder being very small, which is a decided advantage. The cylinder is bored true to a gauge and steam will never blow by the piston if it is given proper lubrication and attention.

## Piston

A rod of steel with a head of cast iron and our method of fastening the two makes a most substantial piston. The rings are cast in one piece, turned down to nearly the required dimensions, a piece of the ring is then cut out to give it spring, the ring pressed together and turned to the exact diameter of the cylinder, making a ring that will hold a steam tight joint and wear for a long time.



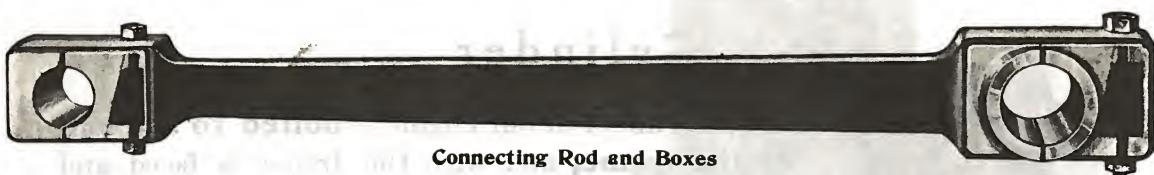
**Cross Head and Piston**



**Cross Head  
With Gibbs Raised**

## Cross Head

Our cross head is made amply large, and with the shoes is planed to fit perfectly. The shoes are bolted to the cross head and turned to fit the bore of the guide. They are fastened to the crank head in a manner that provides an easy method of taking up any wear, and yet are devoid of lock-nuts and other parts to work loose and give annoyance.



Connecting Rod and Boxes

## Connecting Rod

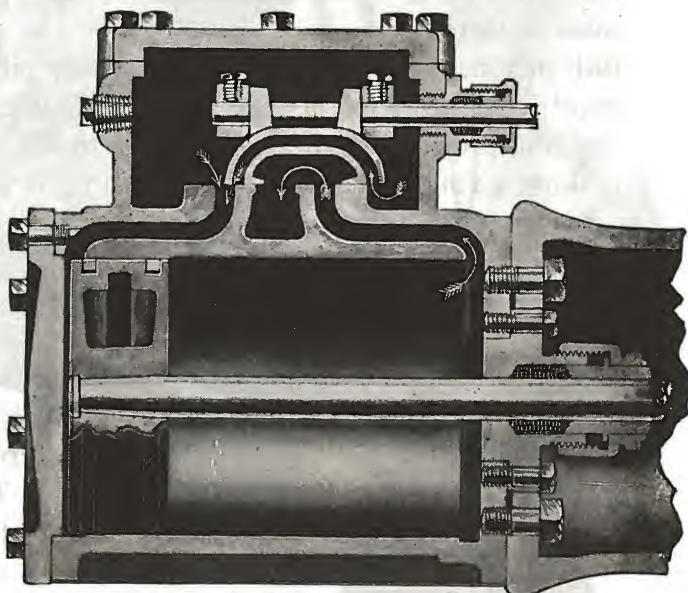
The connecting rod is made of the best **dropped forged steel with solid ends** mortised to receive the boxes. The boxes are high grade bronze scraped to a perfect fit. The adjustment of the boxes is accomplished in a very simple and effectual manner. The back of the box is made on an incline, and a brass wedge is fitted between this incline and the rod, the adjustment being easily accomplished by screwing the wedge one way or the other, thus moving the box, and doing away with keys and cotter pins.

## Crank Shaft and Disk

As the crank shaft is a most important feature in the engine, we take special care in its construction. The shaft is high carbon steel, turned the entire length. This gives true bearing surfaces and exact fits. The disc is turned and the hole for the crank shaft and crank pin bored at the same time thus insuring the crank shaft and crank pin being in exact line with each other. The disc is forced on the shaft by hydraulic pressure and the crank pin forced into the disk in the same manner and then the shaft and disc are put in a lathe and a finishing cut taken over them. The disc has a sufficient counter weight to balance the reciprocal parts of the engine, with the result that there is a no smoother running engine than the Advance.

## Valve

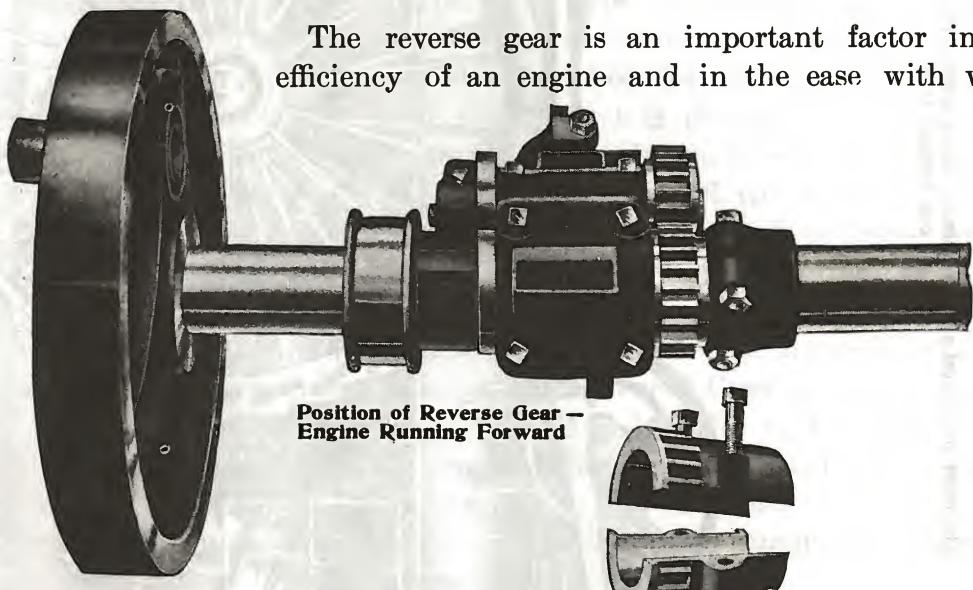
We use a "D" style valve which is **double ported and partially balanced** and made as light as possible consistent with safety, with the result that very little power is required to operate it, and we get a full port opening with short travel and a release so quick that our engines

Sectional View of  
Advance Simple Cylinder

operate under a very low back pressure; in fact, in this respect we equal the results obtained in the modern high priced stationary engine. Our engine tests have shown a back pressure of but three pounds, **while other makes of traction engines, tested at the same time, indicated a back pressure of seventeen pounds and over.** This means that, with engines of the same size cylinder, **the Advance had greater power at the same pressure than the others that were tested.**

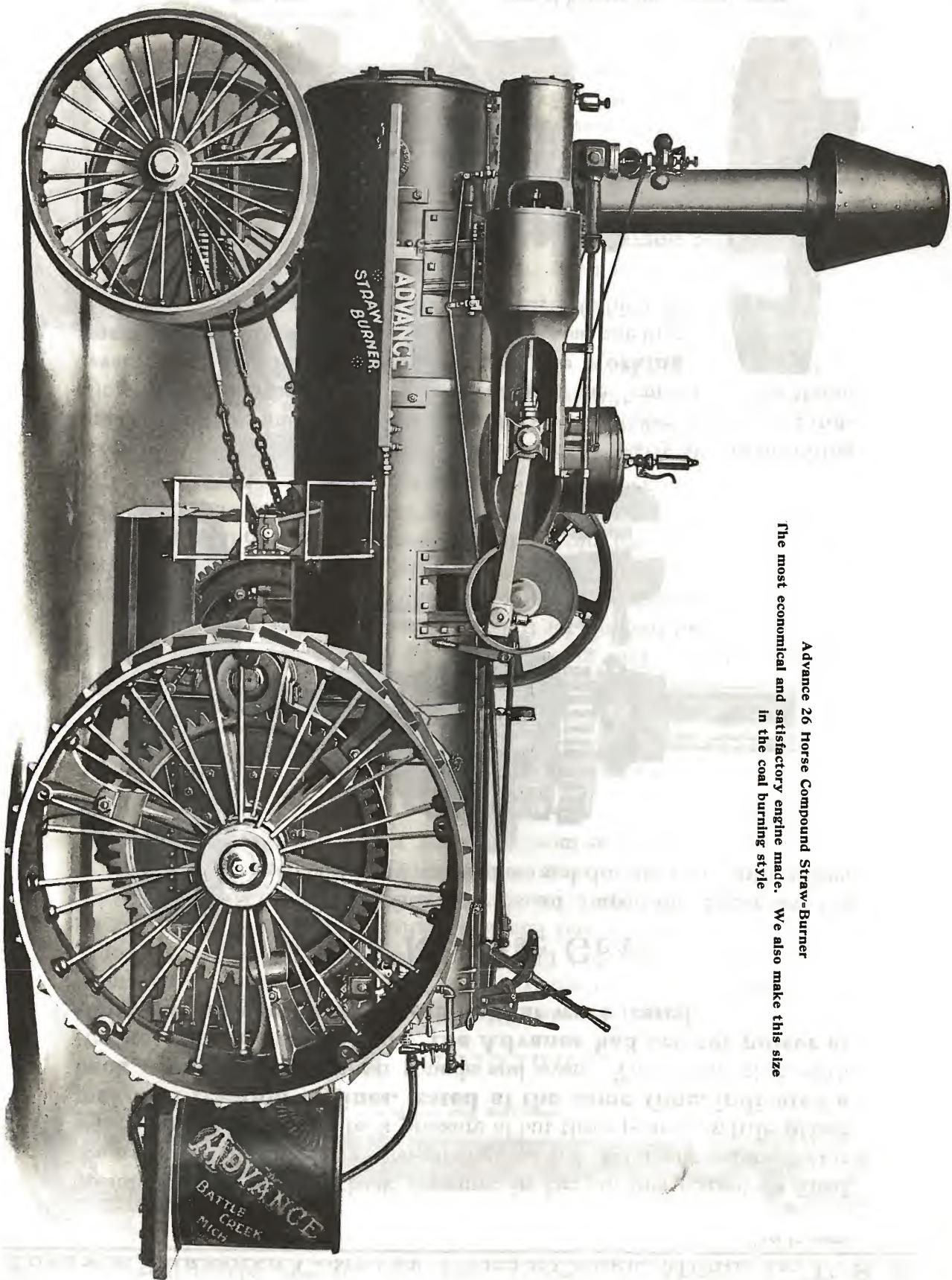
## Marsh Reverse Gear

The reverse gear is an important factor in the efficiency of an engine and in the ease with which



it can be operated. As a rule, a traction engine is nearly always operating under a full load and the variations in the load are taken care of by throttling the governor and not by means of changing the "cut-off." The Marsh reverse gear **has less than one-fourth the working parts of the link motion,** does everything that the link motion will do except to vary the "cut-off," (which as

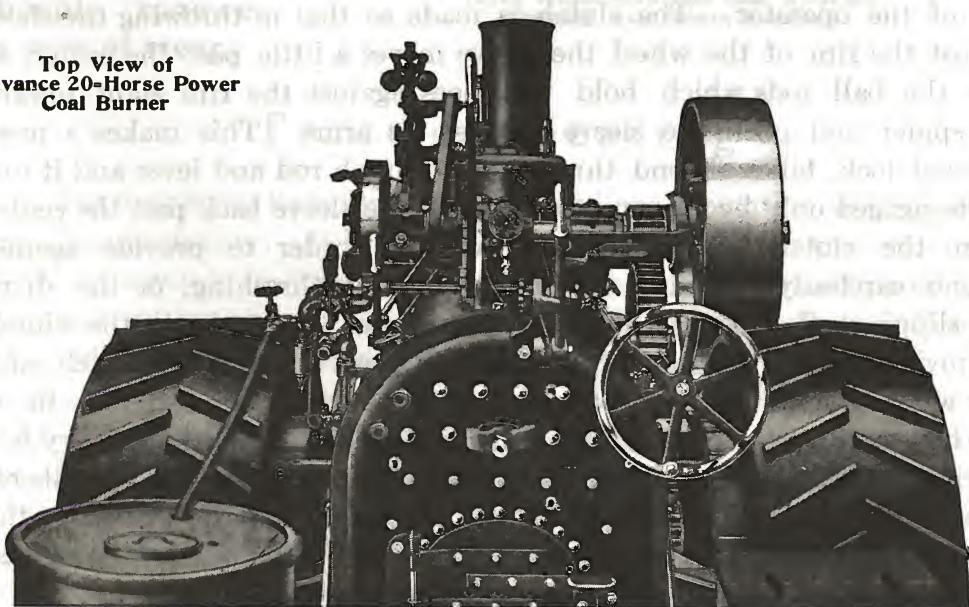




Advance 26 Horse Compound Straw-Burner  
The most economical and satisfactory engine made. We also make this size  
in the coal burning style

explained before is very seldom done by an operator of a traction engine) and with proper care in oiling, the reverse gear will last as long as the balance of the engine. It is composed of a two-part box, one end of which is mounted on the main shaft, and in the other end is a small crank shaft; the crank of this shaft is connected directly to the valve and on the other end of the shaft is fastened a pinion which engages with another pinion on the main shaft as will be seen by referring to the cut. To limit the travel of the box in reversing the engine, a stop-plate is fastened to the frame of the engine, and the box in either of its two extreme positions rests against screws in this plate. The lever for operating the reverse gear is mounted upon a quadrant at the rear of the boiler and within easy reach of the engineer. The quadrant is notched for forward and backward motion and dead center and a spring catch is provided on the lever for holding it in position. The gear on the main shaft is in two pieces, and this allows the reverse gear to be easily taken off the shaft without dismantling the engine, which is a very important and desirable feature. The Marsh reverse gear is recognized as the best device for the purpose that has ever been invented, and is considered of enough importance by mechanical instructors to be included in the courses of instruction in some of the best colleges in the country. Experienced threshermen all over the United States and Canada, who have used it for years, claim that it is far superior to any other reversing mechanism for a traction engine, and we are constantly urged to adapt it so that it can be used on other makes of engines. With slight care and a little attention it makes the most satisfactory form of reverse.

**Top View of  
Advance 20-Horse Power  
Coal Burner**



## Friction Clutch

The friction clutch used on Advance engines is of our own design and serves its purpose to perfection. It is composed of wooden shoes which bear on the inside of the fly wheel rim, a spider which holds the shoes and which is loose upon the shaft and engages with the main pinion, a sleeve which is mounted upon the hub of the spider and to which are attached two ball rods which move the shoes in and out and two half rings which fit in a groove in the sleeve and to which is attached a fork which in turn is connected with a lever mounted on the rear of the boiler within easy reach of the engineer and by means of which

the sleeve may be moved back and forth on the hub of the spider, thus moving the shoes in and out and engaging the rim of the fly wheel at the will of the operator. The clutch is made so that in throwing the shoes against the rim of the wheel the sleeve moves a little past the center, so that the ball rods which hold the shoes against the rim slant toward the spider and push the sleeve against its arms. This makes a most effectual lock, takes all end thrust off the clutch rod and lever and it can be disengaged only by the operator moving the sleeve back past the center when the clutch will disengage itself. In order to provide against anyone carelessly throwing the clutch in when threshing, or the drive belt slipping off and throwing it in, the lever that operates the clutch is provided with a spring and notched quadrant making the clutch safe. Any wear in the shoes may be taken up by screwing the ball rods in or out, they being held in place by means of lock-nuts. There are very few wearing surfaces on this clutch and these are easily oiled and of liberal proportions. In case anyone so desires, the spider may be locked to the fly wheel by means of a pin which we furnish. **This clutch will get you out of bad places and start your heavy loads.**



## Drive Wheels

The rim and hubs are of cast iron, the spokes steel. The rim of the wheel is cast in a chill making it and the lugs very hard and giving them a smooth and long lived wearing surface. The large lugs run diagonally across the face of the wheel, stopping at the middle. The lugs on one-half of the rim come to the center half way between those on the other half. This makes a self cleaning and smooth running wheel on both hard and soft roads and also contributes considerably to the ease with which the engine is operated.

**All the wear in the hub comes upon a removable cast iron sleeve which is easily and cheaply renewed in case of wear.**



**Drive Wheel with Bull Gear Attached  
Showing Axle Sleeve Removed**

## Traction Gearing

In this feature we have always maintained our reputation as builders of first-class machinery. It is important that the gearing of a traction engine should be accurate in order to insure the teeth meshing perfectly and prevent their cutting and grinding out and of sufficient strength to withstand the rough usage and sudden strains to which they are subjected. The gearing is exceptionally heavy, and made of a mixture of steel and iron, which gives it great strength, toughness, and is practically indestructible. The **Advance cushion compensating gear** is a great advantage in plowing, hauling, or any work requiring the starting of heavy loads. The gear is made of two pieces; the rim containing the teeth and the compartment for coil springs, and the spider working inside containing the



Advance 30 Horse Simple Straw-Burner  
Also made in coal burning style. This is a strong puller and a well built  
engine for heavy work

compensating gear pinions. The rim is made with a wide face and heavy teeth, and inside has four compartments containing the driving lugs and coil springs. The spider is turned to fit inside the rim and is made strong and substantial. The pinions are mounted on large steel shafts, and the method of fastening is such as to secure a perfect alignment. When assembled, plates are bolted on which protect the springs from any dust or grit. In operation, the power is first transmitted to the gear rim and then to the eight heavy coil springs. These springs take up all sudden hard strains and transmit the power to the spider containing three bevel pinions. This cushion prevents the breakage of gears by protecting them from sudden jars, absorbs all shocks and gently transmits motion to the driving gear.

**The bull gears of the Advance heavy-geared engine are attached to the drivers so that all end strain is removed from the attaching lugs, and insures rigidity and strength in this important feature. The sleeves in the drivers are turned, and the gears bored to fit them, making a perfect support for the bull gears upon the hubs of the drivers.**

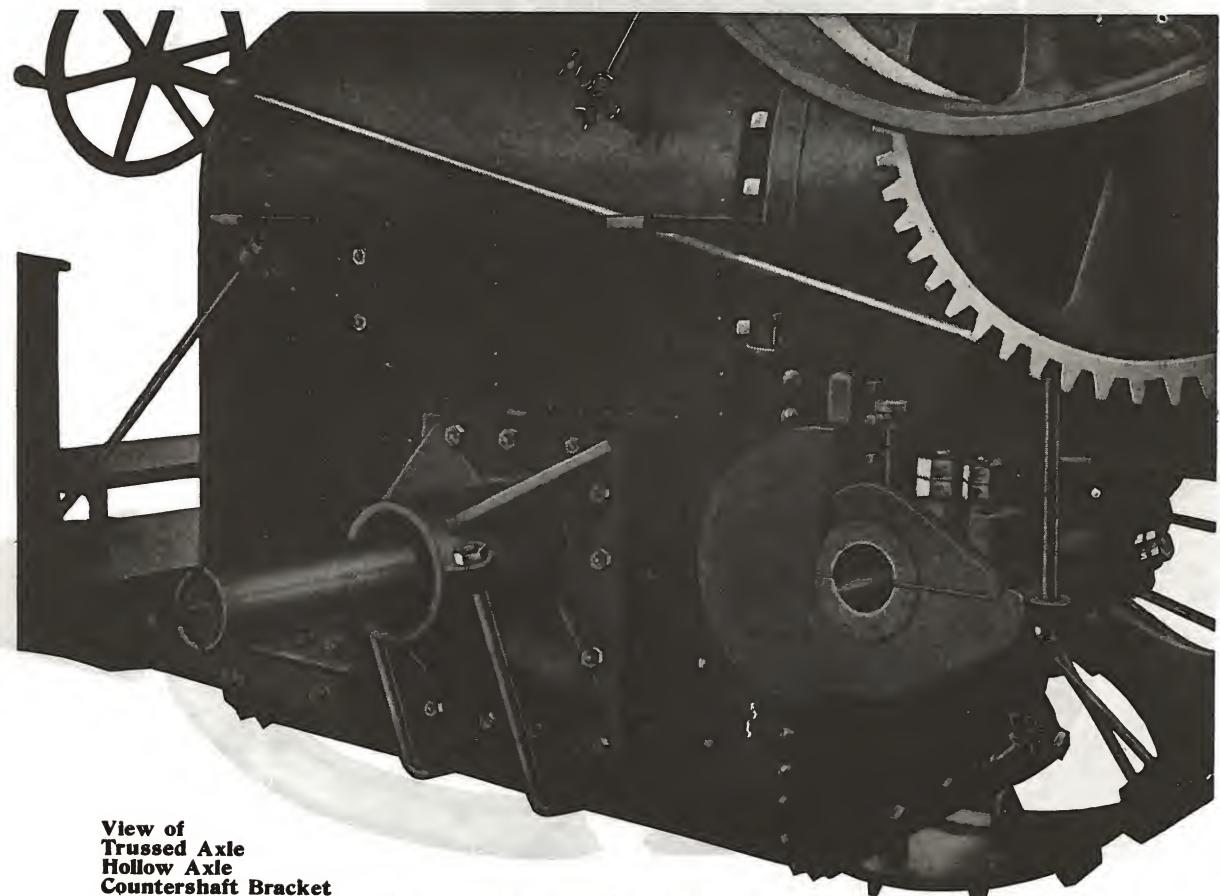


**Cushion Compensating Gear with Plates Removed Showing Heavy Coil Springs**

## Countershaft and Bracket

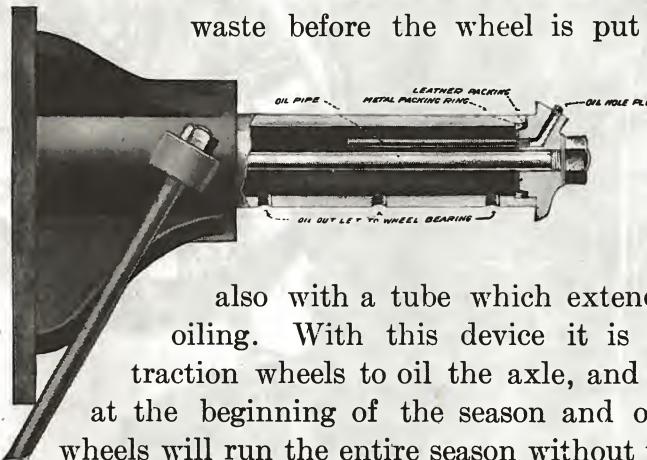
While we have always equipped our engines with a large countershaft and bracket as compared with other engines, we are now making these parts extremely heavy and of new design, giving them particular attention on account of the severe strains to which they are subjected when the engine is used for plowing and other road work.

The countershaft is high grade steel and larger than heretofore. The countershaft bracket is a new design which distributes the strain and makes it possible to take up the wear and not disturb the alignment of the countershaft. This is an important feature and makes our bracket much superior to those where the wear comes in a place that causes the shaft to move further and further out of line. The bracket is securely fastened to the boiler by studs which materially stiffens the boiler. The caps are very large and strong with unusually long bearings lined with high grade babbitt. The cap on the left hand end is held in place by large studs. The one on the right hand end by two very large bolts, and two nuts are used on each stud and bolt to prevent the caps working loose.



## Axle Bracket and Hollow Axe

The drive wheels are mounted upon hollow, self oiling steel axles of large dimensions, and the axle bracket bolted to the side of the boiler, **has a large bearing surface, and is securely trussed to the under side of the fire box.** The axle is packed with oil saturated waste before the wheel is put on, and on the under side



are drilled several holes through which oil runs onto the bearings. The axle cap is fitted with a leather washer which prevents the oil escaping, and

also with a tube which extends into the axle for regular oiling. With this device it is unnecessary to remove the

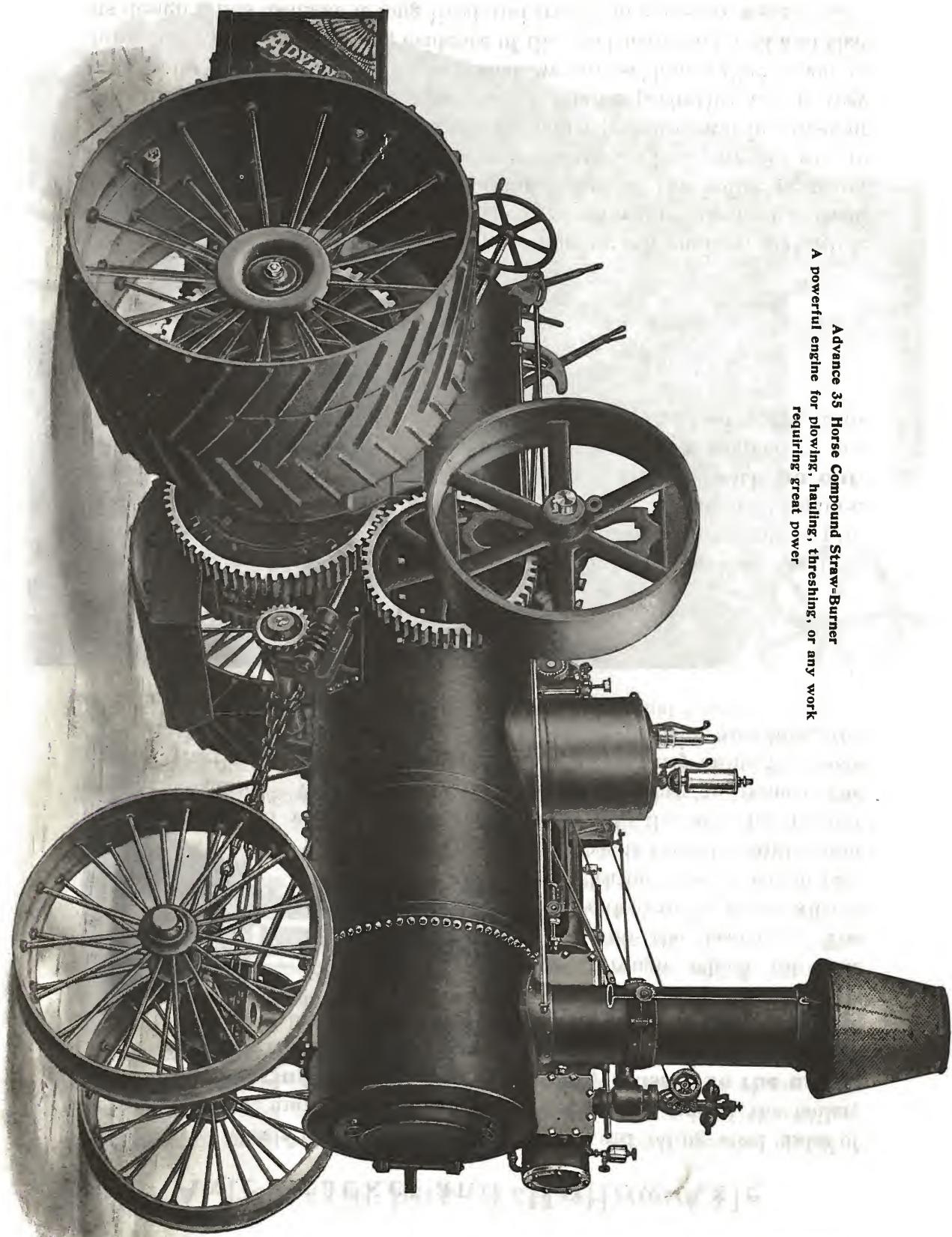
traction wheels to oil the axle, and by properly oiling the waste at the beginning of the season and oiling through the tube, the wheels will run the entire season without trouble.

## Injector

Each engine is fitted with **two injectors** unless otherwise specified. Our injector is the simplest, surest and best boiler feeder that can be procured. These features make it especially desirable for traction engines. When a **pump** is wanted, we furnish one that **is simple with no outside valve gear** to get out of order and in every way adapted to our engines. The exhaust steam may be turned into the feed water, thus heating it before entering the boiler.

## Governor

We have tried all the well-known governors on our engines, and while they are very good at controlling the speed of an engine, in most of them there is a lack of capacity for supplying steam at the boiler pressure, while others are too complicated in construction. The governor we are now using will supply steam at nearly the boiler pressure, and in sufficient quantities; will regulate the speed of an engine perfectly; and is very simple in construction. The fact that we are seldom called upon to furnish repairs for it is strong evidence of the good materials used and that its design tends to make it long lived and free from excessive wear.



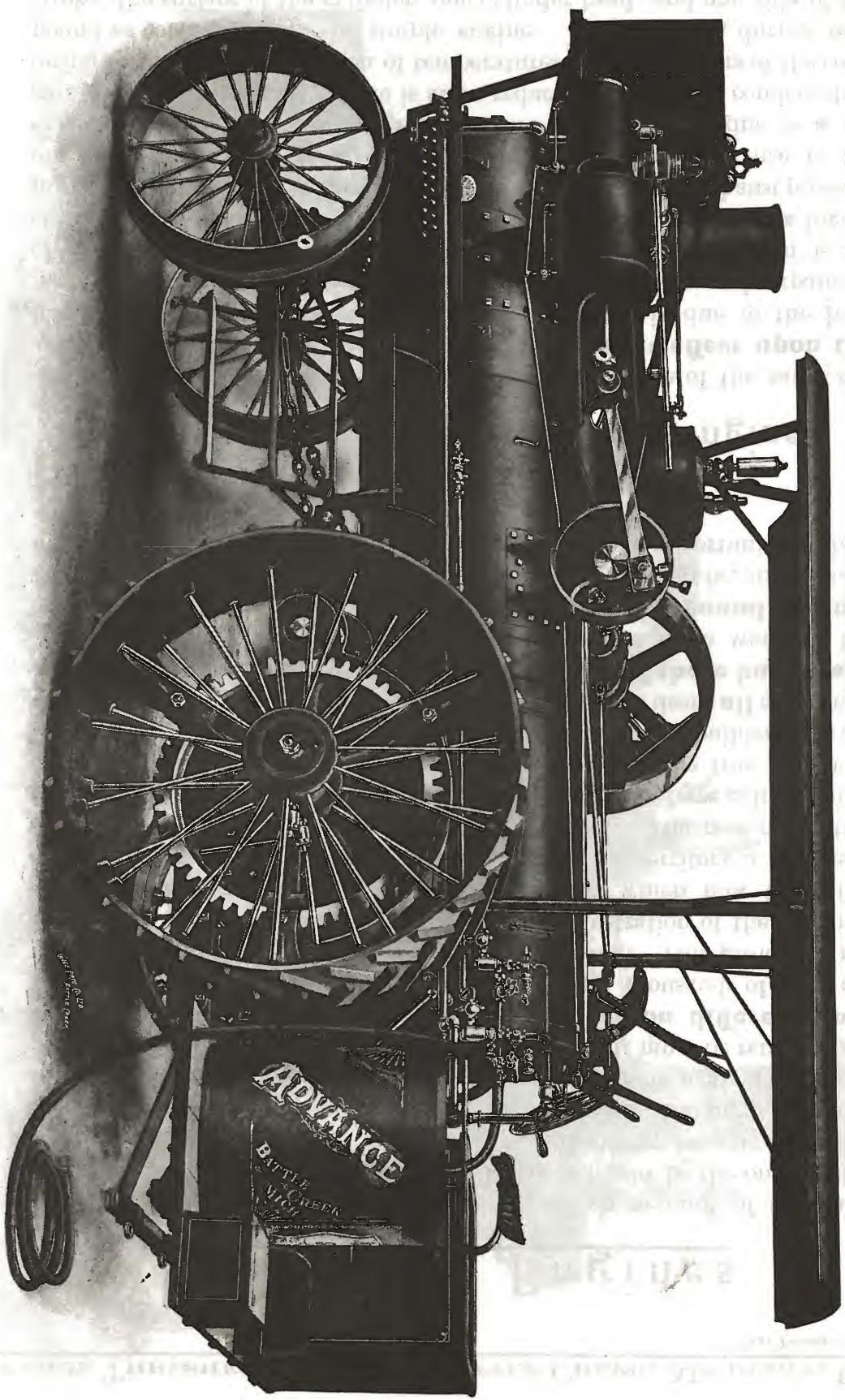
Advance 35 Horse Compound Straw-Burner  
A powerful engine for plowing, hauling, threshing, or any work  
requiring great power

## Compound Engines

WE recommend the compound engine on account of its many advantages over the simple. Today it would be the only engine demanded by the trade had all manufacturers been as successful in building a good compound engine as the Advance. Having failed to do this they have, in some localities, prejudiced the trade against all compound engines regardless of their relative merits. It must be remembered that the **Advance compound engine is built on different lines from any other make and is a great success;** thousands of them are now in use and the demand is constantly increasing. This growth is not confined to any particular territory and, as an illustration of the demand, we cite one territory where we have a large trade, which now takes five compound engines to one simple, while in the same territory a few years ago we sold three simple engines to one compound. The reason for this change of position on the part of the trade is that they have gained confidence in the Advance compound engine and recognize the true situation, that it is not the fault of the compound engine but of the builders who are unable to produce one that is right and for this reason decry **all** compound engines. **Do not be misled by the arguments of these builders** or of those who have purchased their engines and found them wanting, but **confine your inquiries to users of Advance compound engines** for these men know that a successful compound engine can be, and is made by the Advance Thresher Company. All we ask is an opportunity to show you and we know you will be convinced.

### Advantages of a Compound Engine

The **advantages** of a compound over a simple engine of the same size are **twofold**, its **greater economy** and its resultant **effect upon the boiler**. The greater economy of a compound engine is due to the high initial steam pressure, low exhaust pressure, and the increased expansion of the steam. By compounding the engine the rate of expansion is increased, since the steam is expanded in two cylinders, and thus a higher initial pressure may be used and at the same time a lower exhaust pressure obtained than is possible with a simple engine, and this difference in the exhaust pressure between the compound and the simple engine is a net gain for the compound. There is also a reduction in cylinder condensation owing to the smaller variation of temperatures in the cylinders of the compound as compared with the simple engine. In the latter, during each stroke, the surface of the cylinder, one cylinder head, and one side of the



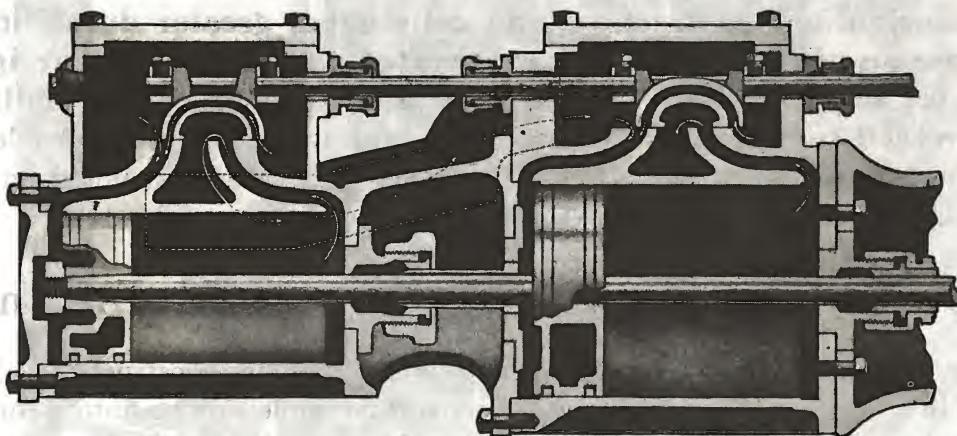
Advance 35 Horse Compound Coal-Burner — Equipped for Plowing

piston are cooled to the temperature of the exhaust steam, and the live steam, when entering, must heat these surfaces to its own temperature, and the heat lost in doing this is so much fuel wasted. In the compound engine the difference between the temperature of the live and exhaust steam in each cylinder is much less, with a corresponding decrease in the amount of heat lost. With two engines, one a single expansion and one a compound but both of the same size and type and, for the sake of illustration, mounted on the same boiler, **the compound engine will require less steam from the boiler, to do the same work, than the simple, owing to its increased rate of expansion and decreased cylinder condensation;** this means that the boiler of the compound will require less draft, have a slower rate of combustion, a greater absorption of heat from the products of combustion, and a lower temperature of gases in the smoke-stack. **The effect on the boiler from this slower rate of combustion is a lower fire-box temperature, a reduced range of expansion and contraction, and consequent greater durability.** There also being less water evaporated, the amount of foreign matter in the boiler will be less and the life of the boiler increased to just that extent. The compound engine, requiring less steam than a simple engine to do the same work, can be mounted on a smaller boiler, and in so doing the saving in weight is considerable.

## Construction of Our Compound Engine

Success in a compound engine is dependent upon its construction. In building ours, we do not attempt to convert a simple engine into a compound by simply bolting on another cylinder. We build our compound engines in the factory, not in the field, and make the parts of proper proportions to do the work required of compound engines. Ours is the tandem type with the low pressure cylinder next to the engine frame, the high pressure cylinder being bolted to the low pressure cylinder. By referring to the cut on the next page and carefully studying the same, it will become apparent why the Advance compound engine succeeds where others fail. There are two independent valves mounted upon the same stem and a steam chest for each cylinder. The valves are double-ported and have the same characteristics as the valve used on a simple engine. **The clearance on either cylinder of our compound is no greater than on a simple engine of the same cylinder dimensions,** which cannot be said of some other makes, **and this small clearance is one of the reasons for the success of our engines.** Our compound engine presents another advantage not shared by others, namely, **there being but one stuffing box on the piston rod between the two**

**cylinders.** This is accomplished by means of a brass sleeve which fits over the piston rod and screws into the low pressure cylinder head with a steam-tight joint, and extends into the stuffing box on the high pressure cylinder. By this arrangement, the space between the high and low pressure cylinders is considerably shortened up and leaves **the only steam joint between the two cylinders in plain sight and of easy access.** The high pressure cylinder, being bolted to the low pressure, is free to expand and contract, and the passage between the exhaust of the high pressure cylinder and the steam chest of the low pressure serves the purpose of a receiver. The balance of the compound engine is built along the same lines as those of the simple engine, and the increase of the working parts of the compound over the simple is merely one more cylinder and valve, two stuffing boxes on the valve stem and one on the piston rod, a very marked contrast to many other makes of compound engines.



The claim has been made that a compound engine built after our pattern, with two valves, has more valve area than those built with one valve. A little **investigation will show that the area and weight of the valves on the Advance compound is less than on the single valve engines,** and by using double-ported valves the friction on the seat is small and the liability of the valves moving on the stem is lessened, and if they do move it is a simple matter to find it out and reset them. With the "many ported single valves" if there is any irregularity in the valve or seat it is impossible to correct it; the valve must be held to the seat by means of a pressure plate, another source of friction and wear; the center of the valve contains live steam, while the outside is surrounded with exhaust steam, and this, in connection with the extremely long steam ports, and consequent excessive clearance, tends to offset the economy derived from compounding. On those engines built with a center head

between the two cylinders it is impossible to tell when there is a leak until the effect on the engine has become quite marked, and then it is a big job to take off the high pressure cylinder to fix it. Admission of high pressure steam to the low pressure cylinder, as some manufacturers do, is an absolute detriment, for the steam will back up into the high pressure cylinder with the result that the power gained is practically nothing, and the engine will use so much more steam that it is impossible for the boiler to take care of it.

## Advance Plowing and Road Engines

To meet the growing demand for plowing and road engines that will withstand the terrific strain to which they may be subjected, we have constructed our plowing and road engine in the 22, 26, 30, and 35 horse-power sizes. This engine is not an experiment, but has been developed after long and severe tests, both in the field and on the road.

We enlarged our shafting, and our countershaft is so strong that it will not spring, twist, or vibrate under the most severe duty. This has necessitated heavier and larger brackets, and longer bearings. We believe no other engine is constructed with brackets having so large a bearing surface upon the boiler. This enables us to use larger stud bolts and more of them and we have never known of a single instance where one of our brackets has been loosened. We have made our entire train of gearing heavier, with wider face, and of a mixture of iron and steel, which has a breaking strain more than one-third higher than the best gray iron. This gives our gearing a toughness and hardness which will resist breaking or wearing and makes it very durable.

For plowing and road work the Advance compound engine is especially adapted. To work to advantage and economically the operator desires to attach as many plows or trucks as the engine can haul. Under such conditions the load is practically constant and the Advance compound is working at its best, and at a saving in fuel and water of twenty per cent over a simple engine, and still more over a simple double engine. **Careful tests in the hands of unprejudiced operators have demonstrated that the Advance compound will operate under the same condition, at a saving in fuel and water of fifty per cent over engines of other makes.** The space for carrying fuel and water on a traction engine is necessarily limited, and the matter of economy is of greatest importance. We have provided ample carrying capacity for both fuel and water on our engines. Our plowing equipment consists of a large fuel bunker and two large water tanks, one located on the front end of the boiler and one on the platform of the engine. We also furnish a two wheeled tender. Our plow hitch is simple, adjustable, of great strength

and inexpensive. It is so designed that it may be attached to the regular platform of our engine. It has several eye bolts that can be adjusted along the hitch and fastened in position by a nut on the back end. We also furnish upon order our new swinging drawbar and plow hitch beam which is a great advantage under some conditions in plowing and road work.

Our plowing and road engine is built for its particular work, and in such a thorough manner that we produce a powerful and durable engine with a minimum of expense for repairs. We are confident our new engine will outplow and outhaul any engine of the same size, and we recommend it, backing the same with our reputation as builders of high-class traction engines.

## Plow Engine Bracket

On our plow engines, 26, 30, and 35 horse-power sizes, we have adopted a

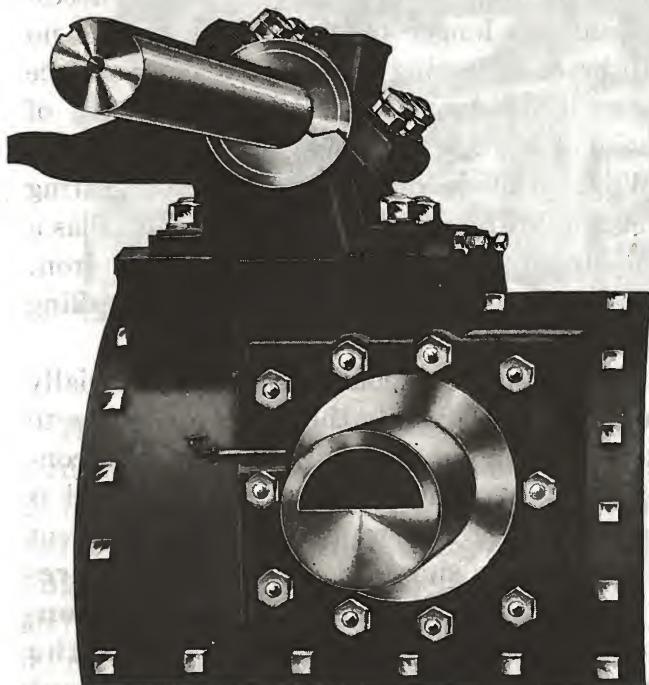
**combination bracket**  
which serves the double purpose of providing a base to which the pillow block is bolted and the intermediate gear stud is attached.

With this arrangement, **the strains** incident to heavy work which are transmitted through the pillow block and the intermediate stud are concentrated on the bracket instead of the boiler.

This combination bracket has an extra large bearing surface on the boiler, a corresponding

increase in the number of boiler screws and affords the most satisfactory method of mounting the intermediate gear stud bracket.

**In any case of accident, or otherwise, the pillow block or intermediate gear stud may be easily renewed without removing the bracket from the boiler or disturbing any of the screws entering it.**



## Dimensions of Our Traction Engines

IN INCHES

### STRAW-BURNERS

	12-H.	14 Com	16-H.	18 Comp.	22-H.	26 Com	30-H.	35 Com
Diameter of Cylinder.....	7 $\frac{1}{8}$	6 $\frac{1}{4}$ x 9	8 $\frac{1}{2}$	7 $\frac{1}{4}$ & 10 $\frac{1}{4}$	9	9 & 12	10	9 & 13
Stroke of Cylinder.....	10	9	10	9	11	10	12	12
Diameter of Shell.....	27 $\frac{1}{2}$	27 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	33 $\frac{1}{2}$	33 $\frac{1}{2}$	38 $\frac{3}{8}$	38 $\frac{3}{8}$
Length of Fire Box.....	38	38	41 $\frac{1}{2}$	41 $\frac{1}{2}$	54 $\frac{1}{4}$	54 $\frac{1}{4}$	54 $\frac{1}{4}$	54 $\frac{1}{4}$
Width of Fire Box.....	22 $\frac{1}{8}$	22 $\frac{1}{8}$	23 $\frac{1}{8}$	23 $\frac{1}{8}$	28	28	32 $\frac{7}{8}$	32 $\frac{7}{8}$
Diameter of Flues.....	3	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Length of Flues (between beads).....	91	91	92 $\frac{1}{2}$	92 $\frac{1}{2}$	99	99	111	111
Width of Fly Wheel.....	10	10	10 $\frac{1}{2}$	10 $\frac{1}{2}$	12 $\frac{1}{2}$	12 $\frac{1}{2}$	13	13
Diameter of Fly Wheel.....	36	36	40	36	44	44	48	48
Diameter of Traction Wheel.....	62	62	64 $\frac{1}{2}$	64 $\frac{1}{2}$	72	72	72	72
Width of Traction Wheel .....	15	15	17	17	26	26	26	30
Width of Traction Wheel, Plow Engine.....							30	30
Tread of Rear Wheel.....	75	75	83	83	109 $\frac{1}{2}$	109 $\frac{1}{2}$	115	125
Tread of Rear Wheel, Plow Engine.....							125	125
Height to top of Fly Wheel.....	86	87	93 $\frac{1}{4}$	92 $\frac{1}{2}$	105 $\frac{1}{4}$	106	112 $\frac{3}{4}$	112 $\frac{3}{4}$
Height to top of Stack.....	122 $\frac{1}{4}$	122 $\frac{1}{4}$	128	128	144 $\frac{1}{4}$	144 $\frac{1}{4}$	150	150
Length over all.....	185	185	187 $\frac{1}{2}$	187 $\frac{1}{2}$	204	204	220 $\frac{1}{4}$	220 $\frac{1}{4}$
Diameter of Crank Shaft.....	2 $\frac{3}{4}$	3	3	3 $\frac{1}{8}$	3 $\frac{1}{8}$	3 $\frac{1}{2}$	3 $\frac{1}{8}$	3 $\frac{1}{8}$
Diameter of Counter Shaft.....	2 $\frac{3}{4}$	2 $\frac{3}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	4	4	4	4
Diameter of Counter Shaft, Plow Engine.....							5 $\frac{1}{4}$	5 $\frac{1}{4}$
Diam. and length of Bearing for Front Axle.....	2 $\frac{9}{16}$ x 10	2 $\frac{9}{16}$ x 10	2 $\frac{1}{2}$ x 12	2 $\frac{1}{2}$ x 12	2 $\frac{3}{4}$ x 12	2 $\frac{3}{4}$ x 12	3 x 14	3 x 14
Diam. and length of Bearing for Rear Axle.....	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	5 $\frac{1}{8}$ x 22 $\frac{1}{8}$	5 $\frac{1}{8}$ x 22 $\frac{1}{8}$	6 $\frac{1}{4}$ x 26 $\frac{1}{8}$	6 $\frac{1}{4}$ x 26 $\frac{1}{8}$
Face of Bull Pinion.....				5	6	6	7	7
Face of Main Pinion.....				4 $\frac{1}{2}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	6
<b>Number of Flues.....</b>	<b>15</b>	<b>15</b>	<b>24</b>	<b>24</b>	<b>24</b>	<b>24</b>	<b>38</b>	<b>38</b>
<b>Speed (Revolutions).....</b>	<b>225</b>	<b>244</b>	<b>225</b>	<b>244</b>	<b>220</b>	<b>220</b>	<b>220</b>	<b>220</b>

### WOOD- AND COAL-BURNERS

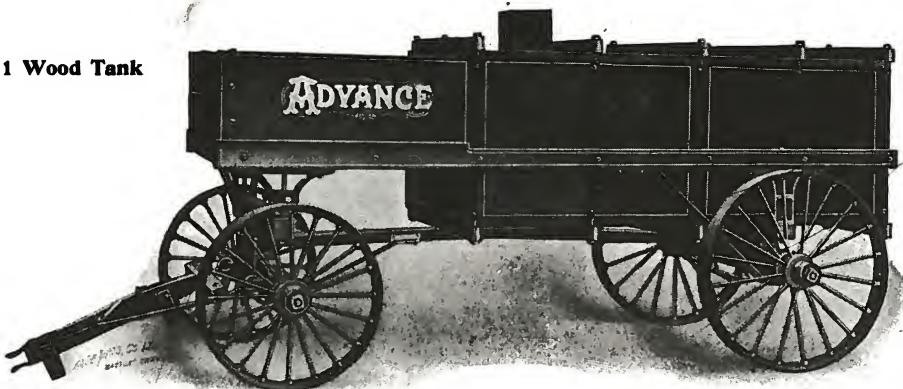
	10-H.	12-H.	14 Com	16-H.	18 Comp.	20-H.	22-H.	26 Com	30-H.	35 Com
Diameter of Cylinder.....	7 $\frac{1}{4}$	7 $\frac{5}{8}$	6 $\frac{1}{4}$ & 9	8 $\frac{1}{2}$	7 $\frac{1}{4}$ & 10 $\frac{1}{4}$	9	9	9 & 12	10	9 & 13
Stroke of Cylinder.....	10	10	9	10	9	10	11	10	12	12
Diameter of Shell.....	25 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	33 $\frac{3}{4}$	33 $\frac{3}{4}$	38 $\frac{3}{8}$	38 $\frac{3}{8}$
Length of Fire Box.....	34 $\frac{1}{2}$	36 $\frac{1}{2}$	36 $\frac{1}{2}$	40	40	47 $\frac{1}{4}$	54 $\frac{1}{4}$	54 $\frac{1}{4}$	53 $\frac{3}{8}$	53 $\frac{3}{8}$
Width of Fire Box.....	21	23	23	24	24	24	28	28	32 $\frac{1}{4}$	32 $\frac{1}{4}$
Height of Fire Box.....	34	35 $\frac{1}{2}$	35 $\frac{1}{2}$	39	39	39	46	46	51 $\frac{1}{4}$	51 $\frac{1}{4}$
Diameter of Flues.....	1 $\frac{1}{4}$	2	2	2	2	2	2	2	2	2
Length of Flues (between beads).....	69	79	79	77 $\frac{1}{4}$	77 $\frac{1}{4}$	85 $\frac{1}{4}$	79 $\frac{1}{8}$	79 $\frac{1}{8}$	91 $\frac{5}{8}$	91 $\frac{5}{8}$
Width of Fly Wheel.....	8	10	10	10 $\frac{1}{2}$	10 $\frac{1}{2}$	10 $\frac{1}{2}$	12 $\frac{1}{2}$	12 $\frac{1}{2}$	13	13
Diameter of Fly Wheel.....	36	36	36	40	36	40	44	44	48	48
Diameter of Traction Wheel.....	60	62	62	64 $\frac{1}{2}$	64 $\frac{1}{2}$	64 $\frac{1}{2}$	72	72	72	72
Width of Traction Wheel.....	12	15	15	17	17	21	26	26	26	30
Width of Traction Wheel, Plow Eng.....									30	30
Tread of Rear Wheel.....	73 $\frac{1}{2}$	75	75	83	83	91	109 $\frac{1}{2}$	109 $\frac{1}{2}$	115	125
Tread of Rear Wheel, Plow Engine.....									125	125
Height to top of Fly Wheel.....	83 $\frac{1}{2}$	86	87	93 $\frac{1}{4}$	92 $\frac{1}{2}$	94 $\frac{1}{2}$	105 $\frac{1}{2}$	106	112 $\frac{3}{4}$	112 $\frac{3}{4}$
Height to top of Stack.....	101	104 $\frac{1}{2}$	104 $\frac{1}{2}$	110 $\frac{1}{2}$	110 $\frac{1}{2}$	110 $\frac{1}{2}$	126 $\frac{1}{2}$	126 $\frac{1}{2}$	127	127
Length over all.....	174	185	185	187 $\frac{1}{2}$	187 $\frac{1}{2}$	201	204	204	220 $\frac{1}{4}$	220 $\frac{1}{4}$
Diameter of Crank Shaft.....	2 $\frac{5}{8}$	2 $\frac{3}{4}$	3	3	3 $\frac{1}{8}$	3 $\frac{1}{8}$	3 $\frac{1}{8}$	3 $\frac{1}{8}$	3 $\frac{1}{8}$	3 $\frac{1}{8}$
Diameter of Counter Shaft.....	2 $\frac{5}{8}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	4	4	4	4
Diameter of Counter Shaft, Plow Eng.....									5 $\frac{1}{4}$	5 $\frac{1}{4}$
Diam. and length of Bearing for Front Axle.....	2 $\frac{5}{8}$ x 10	2 $\frac{5}{8}$ x 10	2 $\frac{8}{16}$ x 10	2 $\frac{1}{2}$ x 12	2 $\frac{1}{2}$ x 12	2 $\frac{1}{2}$ x 12	2 $\frac{1}{2}$ x 12	2 $\frac{1}{2}$ x 12	3 x 14	3 x 14
Diam. and length of Bearing for Rear Axle.....	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	4 $\frac{1}{8}$ x 14	5 $\frac{1}{8}$ x 22 $\frac{1}{8}$	5 $\frac{1}{8}$ x 22 $\frac{1}{8}$	6 $\frac{1}{4}$ x 26 $\frac{1}{8}$	6 $\frac{1}{4}$ x 26 $\frac{1}{8}$
Face of Bull Pinion.....				5	5	5	6	6	7	7
Face of Main Pinion.....				4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	6
<b>Number of Flues.....</b>	<b>40</b>	<b>38</b>	<b>38</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>42</b>	<b>42</b>	<b>70</b>	<b>70</b>
<b>Speed (Revolutions).....</b>	<b>225</b>	<b>225</b>	<b>244</b>	<b>225</b>	<b>244</b>	<b>225</b>	<b>220</b>	<b>220</b>	<b>220</b>	<b>220</b>

At an extra cost wider faces to traction wheels can be furnished as follows: 21-inch face for 16 and 18 horse engines; extension rims for the 17-inch face wheel used on 16 and 18 horse engines, are 10 inches wide; for the 21-inch face wheel used on 20 horse engines or special on 16 and 18 horse engines, are 7 inches wide; for the 26-inch face wheel used on the 22 and 26 horse engines are 8 inches wide; for the 30-inch face wheel used on the 30 and 35 horse engines are 10 inches wide.

**ADVANCE THRESHER COMPANY, BATTLE CREEK, MICHIGAN, U. S. A.**

*Page Thirty-four*

No. 1 Wood Tank



## Water and Fuel Carriers

The Advance wood tanks are the best on the market in construction, durability, convenience, and ease with which they are hauled. We furnish either wood or steel tanks mounted or unmounted.

Number one tank is a combination tank and fuel wagon with the fuel box located in front where it is convenient to the fireman. It has capacity for twelve barrels of water and a good supply of fuel.

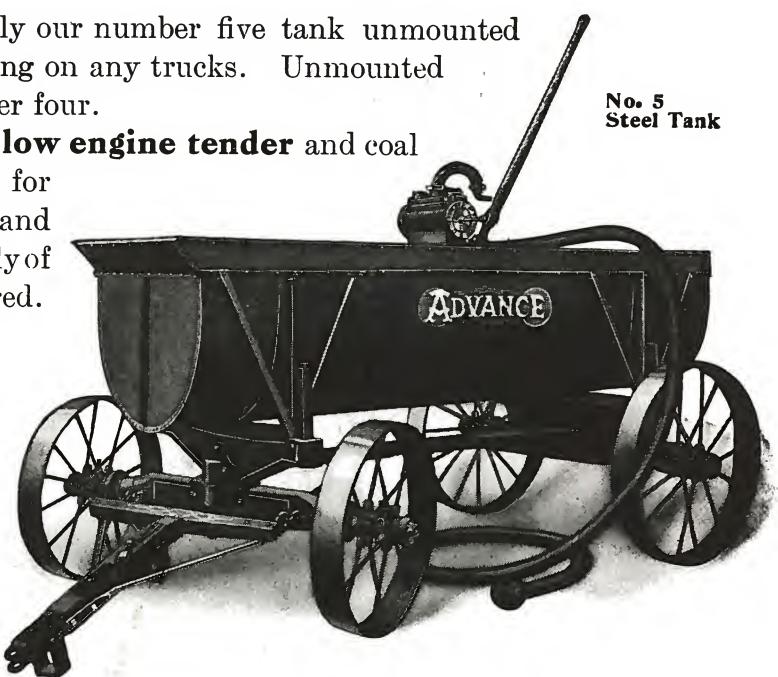
Number two tank is a square box tank without the fuel box and has a capacity for twelve barrels of water. **Advance Wood Tanks** are all securely trussed and provided with adjustable stays, which allows taking up all shrinkage due to standing "dry" for a great length of time, and almost any case of leakage can be readily repaired. **Advance Steel Tanks** have a capacity of twelve barrels, and are made of 16-gauge sheet steel, all joints thoroughly packed and soldered inside, and are strong and durable. Each tank has a rocking motion on the front bolster which prevents it from being strained and twisted while on the road. The tank is thoroughly braced at each corner and around the tank immediately over the bolster is a heavy steel band four inches wide.

No. 2 Wood Tank



If desired, we supply our number five tank unmounted and ready for mounting on any trucks. Unmounted we designate it number four.

Our **number six plow engine tender** and coal bunker was designed for plowing and hauling and wherever a large supply of fuel and water is required. It is well braced and mounted on substantial trucks with wide wheels and has a capacity of eight barrels of water and seven hundred pounds of fuel.

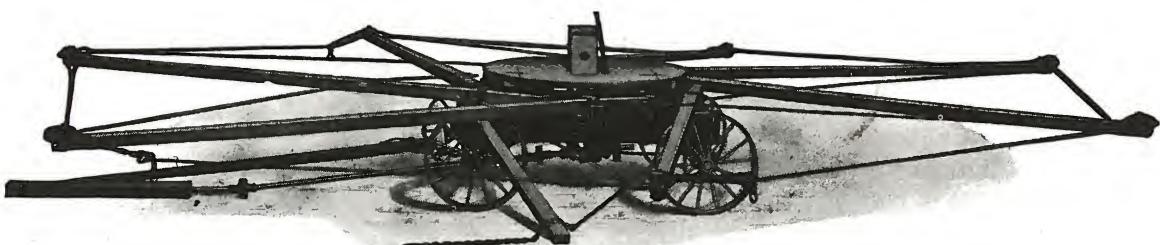


## Saw Mills

If interested in saw mills we would be pleased to send you our special saw mill circulars giving full information about our mill. We can furnish a good one, moderate in price, either single or double as you may desire. The single mills, with proper power are capable of turning out from four to six thousand feet of lumber per day, while the double ones have an output of about ten thousand feet daily. Send for either standard "R" or Pony "E" or "F" circulars.

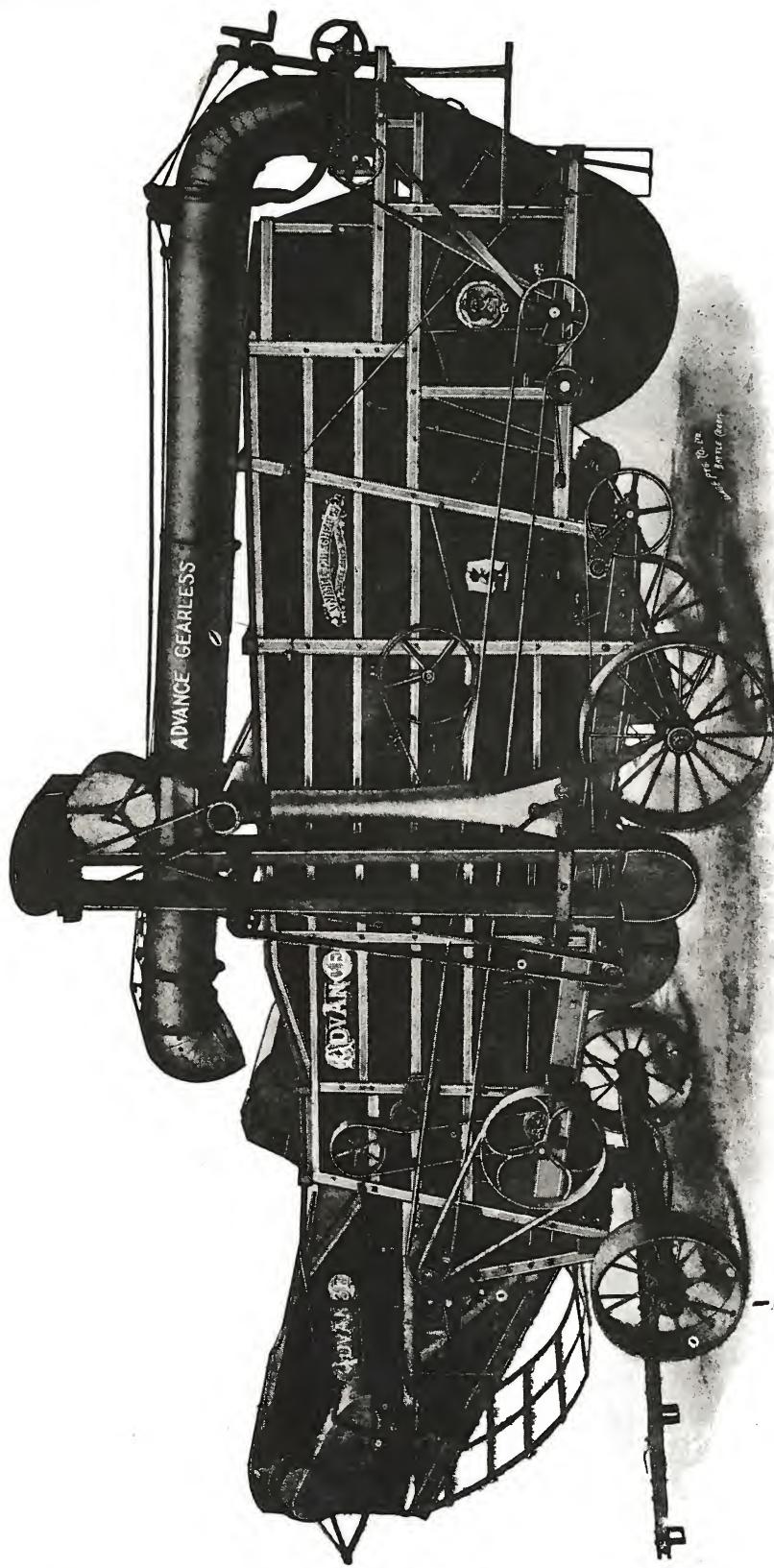
## Horse Powers

We build the well known Dingee-Woodbury horse-power. The shafts are all large, run in boxes of liberal dimensions, and are all babbitted in place so as to secure perfect alignment. The pinions and gearing are made of the best quality of iron, especial care being taken in making the **master wheel**. By a slight change of the sockets on the bull rim any number from ten to eighteen horses can be used.



**ADVANCE THRESHER COMPANY, BATTLE CREEK, MICHIGAN, U. S. A.**

*Page Thirty-six*



**Advance Shaker Separator  
With Feeder, Wind Stackter, and Herald Weigher and Wagon-Loader Attached**



THE ideal separator is one that has the greatest capacity and the most complete separation. All machines have some capacity and some claim for separation, and every manufacturer aims to adapt his construction so as to approach as nearly to the ideal as he can. However most of them fall far short of the goal, and into the common error of increasing the capacity by lessening the separation or vice versa. This does not make a satisfactory separator.

As much of the separation as is possible should be obtained at the grates, and to do this successfully requires the largest grate surface obtainable together with some means of keeping the straw moving swiftly and thinly over it, in order that all threshed grain may easily fall through the grates and finally be separated. Perfect separation cannot be accomplished without some means of keeping the grates open and the straw loosened thoroughly.

There is **no machine made that approaches the Advance for the number of square feet of grate surface, every inch of which is a most efficient separating medium**, and by means of the forks and grate cleaners the straw is broken apart and the grates kept open so that the grain can fall through into the grain pan. What is not saved at the grates must be separated by the straw racks. By a peculiar arrangement the Advance racks are given all the throw necessary to save what little grain escapes separation at the grates and at the same time **the straw moves speedily through the machine in a wide, even, thin layer**. In machines which do not have such large grate surface, the racks are given more work to do, and in order to separate efficiently must throw the straw back and forth at the expense of capacity.

**It is quite important for the thresherman who desires to make money, to have a machine that will not only satisfy his customers, but will show a big day's run.**

This can be done if he is equipped with an **Advance machine**, which has the greatest capacity and is most durably constructed. He will suffer no losses waiting for repairs.

## Grate and Forks

By referring to the cut, it will be seen that the grate is directly behind the cylinder and really a continuation of the concaves. It is very simple in construction, being composed of wrought iron slats which slip into slots in three castings and are so shaped and fastened into the separator that when the straw is picked up by the forks it is carried upward and rearward and deposited on the front shaker. In this movement the straw is loosened and shook up, so that a greater part of the grain drops on the grate and falls through into the grain pan. Several malleable iron fingers, shaped to conform with the grate, are moved back and forth by means of a bell crank lever, effectually keeping the grate open so that the grain and chaff drops freely through into the grain pan. **No machine made has a grate surface that even approaches that of the Advance.** As by far the greater part of the separation should be accomplished by the grates in any style of thresher, it will readily be seen that the Advance has a great advantage over any other by reason of its unequalled grate surface, which takes care of the cylinder separation, and does not allow a greater part of the loose grain to become imbedded in the straw in its course through the machine.

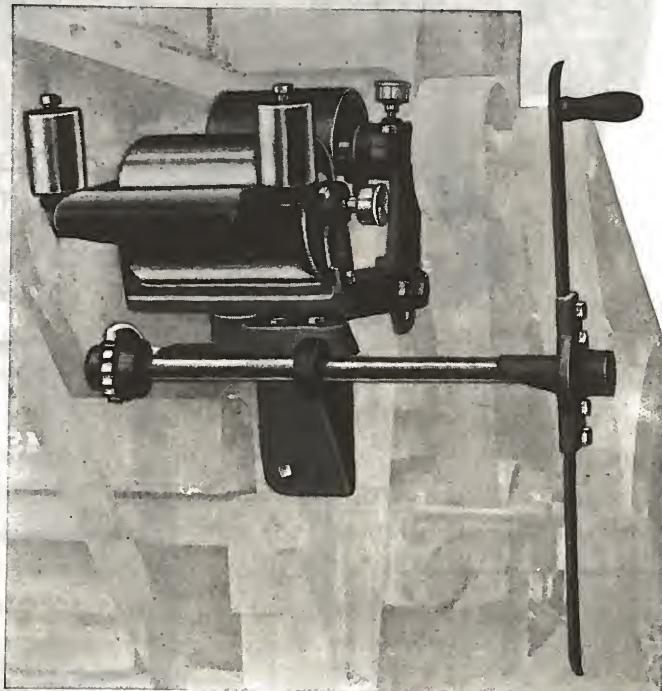
**Cylinder, Grate and Forks**  
Note the large grate surface

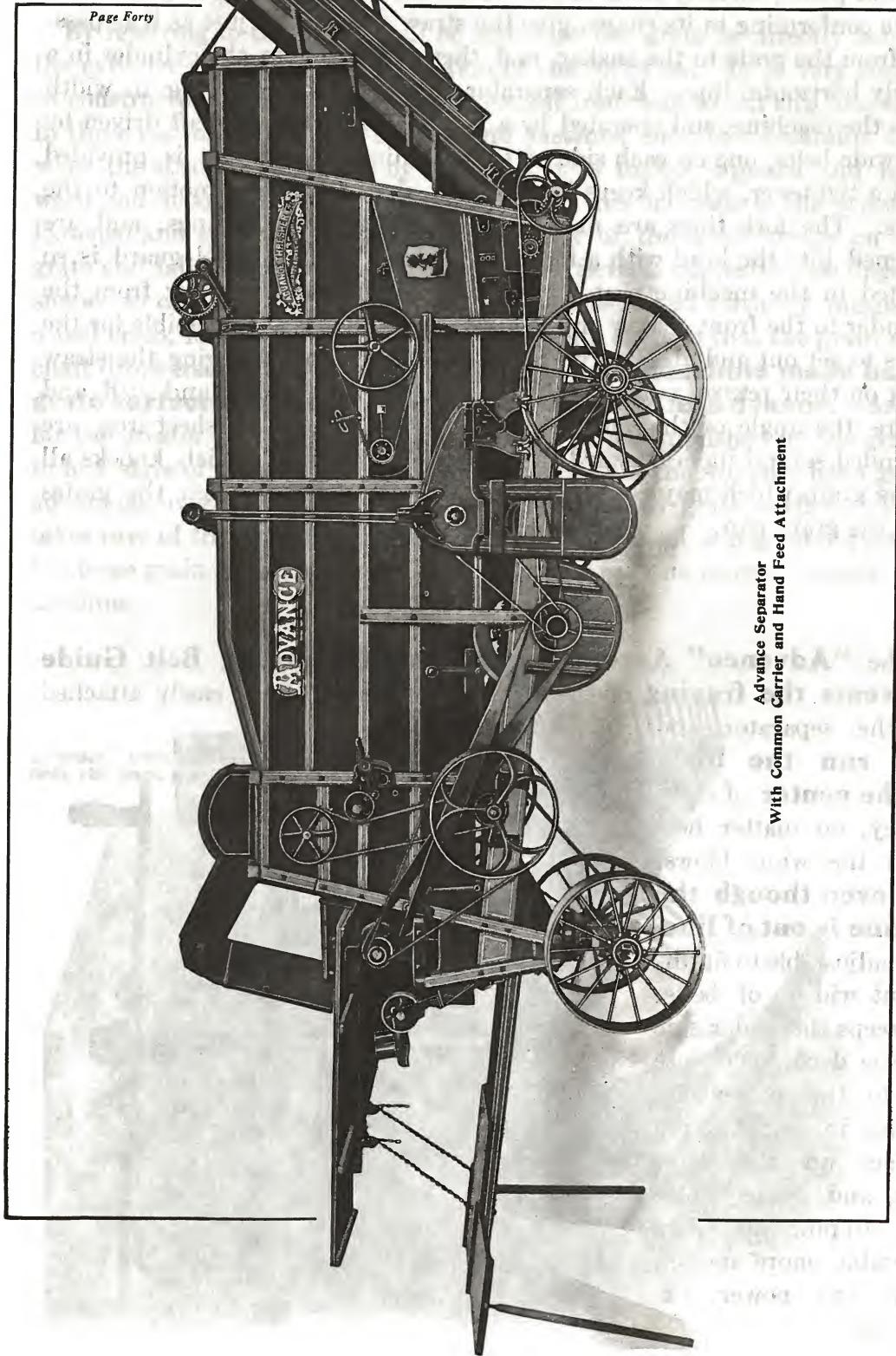


The forks are constructed so that they pass into the straw in a nearly vertical plane, directly back of the cylinder, travel along the grate in a curve conforming to its shape, give the straw a final kick just as it is passing from the grate to the shaker, and then pass back to the cylinder in a nearly horizontal line. Each separator has two forks, varying in width with the machine, and operated by a heavy all steel crank shaft driven by two wide belts, one on each side of the machine. Each belt is provided with a tightener, which keeps it tight and gives a uniform motion to the forks. The fork tines are made of high grade drop forgings, and are fastened into the head with a lock washer and nut. A steel guard is so located in the machine that it forms a conduit for the straw from the cylinder to the front shaker and is arranged so that it is impossible for the forks to get out and absolutely prevents the forks from dragging the straw back on their return motion. The guard is made strong and stiff and where the angle of the guard changes, short pieces of sheet iron are extended several inches toward the rear of the machine, which knocks all flying grain which may come from the cylinder down through the grates into the grain pan.

## Belt Guide

The "**Advance**" **Automatic and Self-Governing Belt Guide** **prevents the fraying** of the sides of the drive belt, is easily attached to the separator, and will **run the belt to the center** of drive pulley, no matter how hard the wind blows, and **even though the engine is out of line**. It is adjustable to fit different widths of belts. It keeps the under side of the drive belt close up to the pulley resulting in large friction surface on the drive belt, and consequently less slipping and considerable more motion from the power expended.

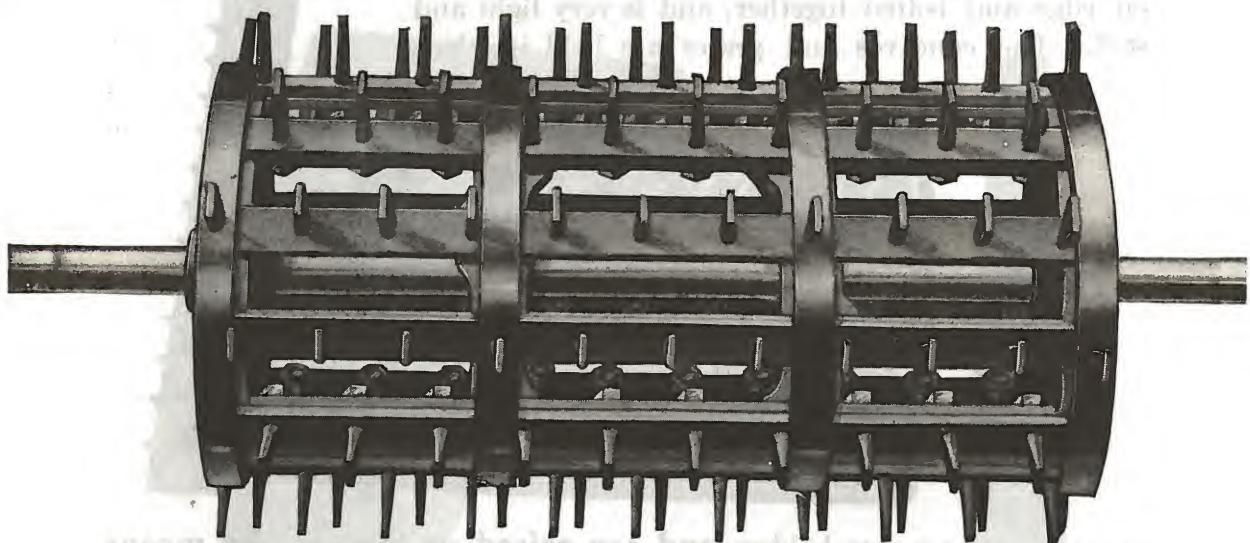




Advance Separator  
With Common Carrier and Hand Feed Attachment

## Cylinder

Our cylinder is of the well-known double bar pattern. The heads are cast iron, keyed to the shaft and made with recesses to fit the bars. There is a series of small holes around the edge into which lead is driven to balance the cylinder, and this lead is put in in such a manner that it cannot possibly come out. The bars are of steel one-half inch thick and an inch and three-quarters wide and are punched with a square tapered hole to exactly fit the shanks of the teeth. The teeth are held in the bar with lock washers under the nut, which holds them tight. Between the cylinder heads are one or more (depending upon the width of the cylinder) cast iron rings which stiffen and support the bars. The bars are held in place by a steel band shrunk around them over each head and ring



**Cylinder**

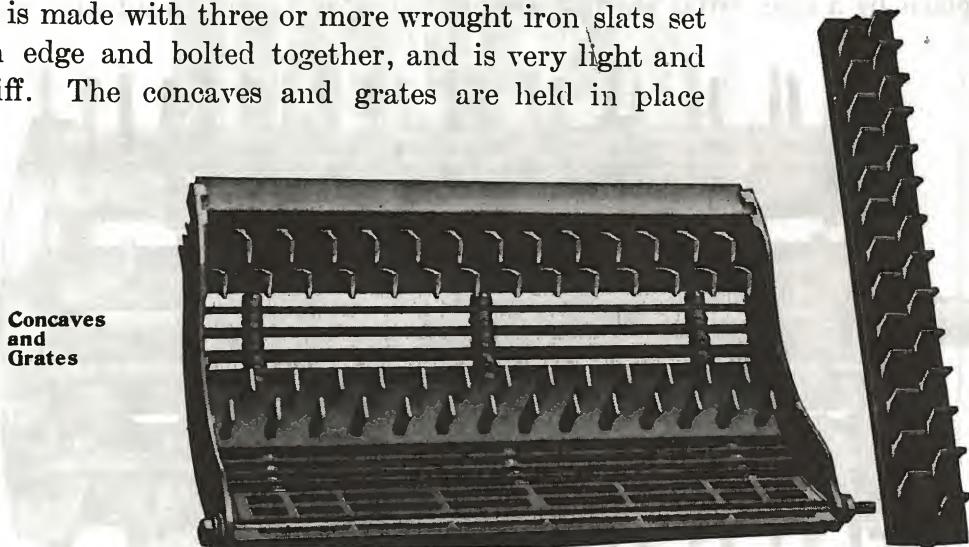
which is bolted to the same by means of teeth with extra long shanks. The cylinder is mounted on a large machinery-steel shaft which carries all the pulleys necessary to drive the separator. Each cylinder is carefully trued up and balanced before it is put in the separator and is afterwards given a second test by running it in the machine. Every precaution is taken to make the cylinder strong, durable, and true, and the teeth are drawn down true to a gauge. The bearings for the cylinder shaft are very long, giving a large bearing surface and are lined with babbitt; the boxes are in halves for taking up wear, and are oiled with compression grease cups. With the large number of teeth used the toughest grains are cleanly threshed out of the head.

## Cylinder Sides

The cylinder sides are of iron, securely braced and so constructed that they make a very rigid support for the cylinder shaft boxes and concave holders, **and stiffen the front end of the separator.**

## Concaves and Grates

The concaves are made of iron, very heavy, and exceedingly strong. The holes are made to fit the shanks of the teeth and when the nuts are drawn down tight the teeth cannot work loose. We use a special blank grate which gives a much larger opening than the old style cast iron grate. It is made with three or more wrought iron slats set on edge and bolted together, and is very light and stiff. The concaves and grates are held in place



by cast iron concave holders **and are raised or lowered by means of a simple and positive worm gear adjusting device, of the latest type, which allows the grates and concaves to be set at any position desired.**

## Advance Teeth

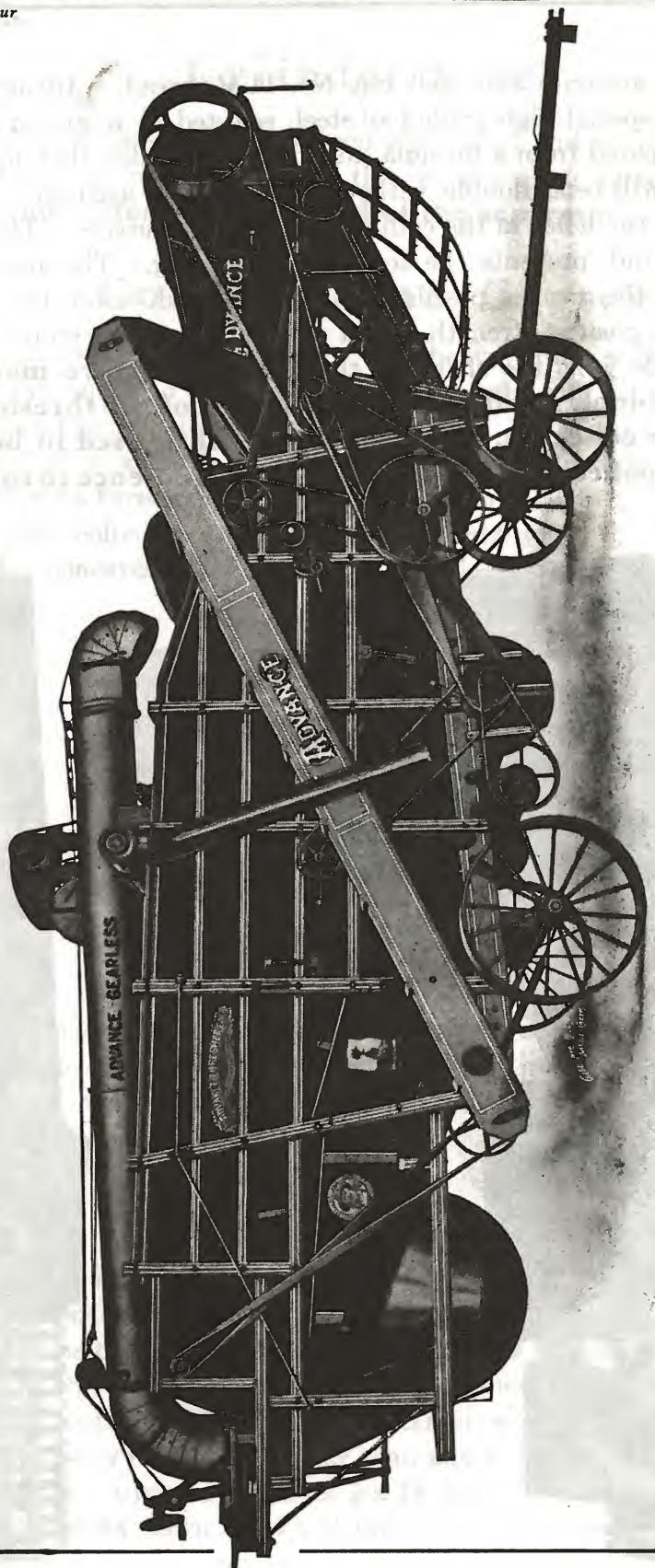
We have provided **a tooth larger and better in every way than any other tooth ever used heretofore in any make of machine.** The Advance is the pioneer **large tooth** and the best shaped tooth on the market. In the thickness of the blade and shoulder and size of shank the Advance tooth is more rigid, has a larger working surface and more qualities necessary for resisting wear than any tooth made. The threshing end of the new Advance tooth is  $\frac{1}{4} \times 1\frac{1}{8}$  inches. The shoulder is  $\frac{3}{4} \times \frac{3}{4}$  inches and **tapers** down to  $\frac{1}{8} \times \frac{1}{8}$  inches at the shank. The shank is

$\frac{5}{8}$ -inch, with an accurate and well cut No. 11 V-thread. Advance teeth are all made of special high grade tool steel, selected to meet our requirements, and prepared from a formula adopted by us after thorough tests. Advance teeth will bend double without breaking, are accurate, uniform, and made to fit the holes in the cylinder bars and concaves. The shoulder is square and prevents the tooth from turning. The metal is so distributed that the greatest possible wear may be had before the tooth is worn out. The greatest strength is at a point of maximum strain, namely where the blade joins the shank of the tooth. **We have made this tooth with a  $\frac{5}{8}$ -inch shank and in the interest of the thresherman, designed new concaves, and the same tooth is used in both the cylinder and concaves. This is a great convenience to threshermen.**



# ADVANCE THRESHER COMPANY, BATTLE CREEK, MICHIGAN, U. S. A.

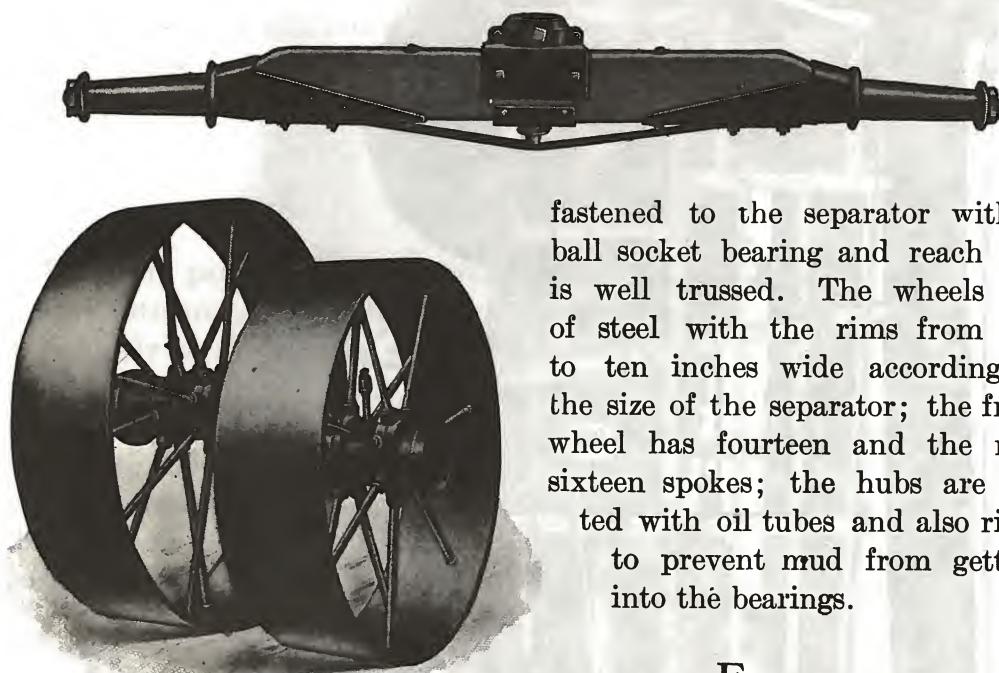
Page Forty-four



Advance Shaker Separator  
With Feeder, Gearless Wind Stackter, and Herald Weigher and Wagon Loader

## Trucks

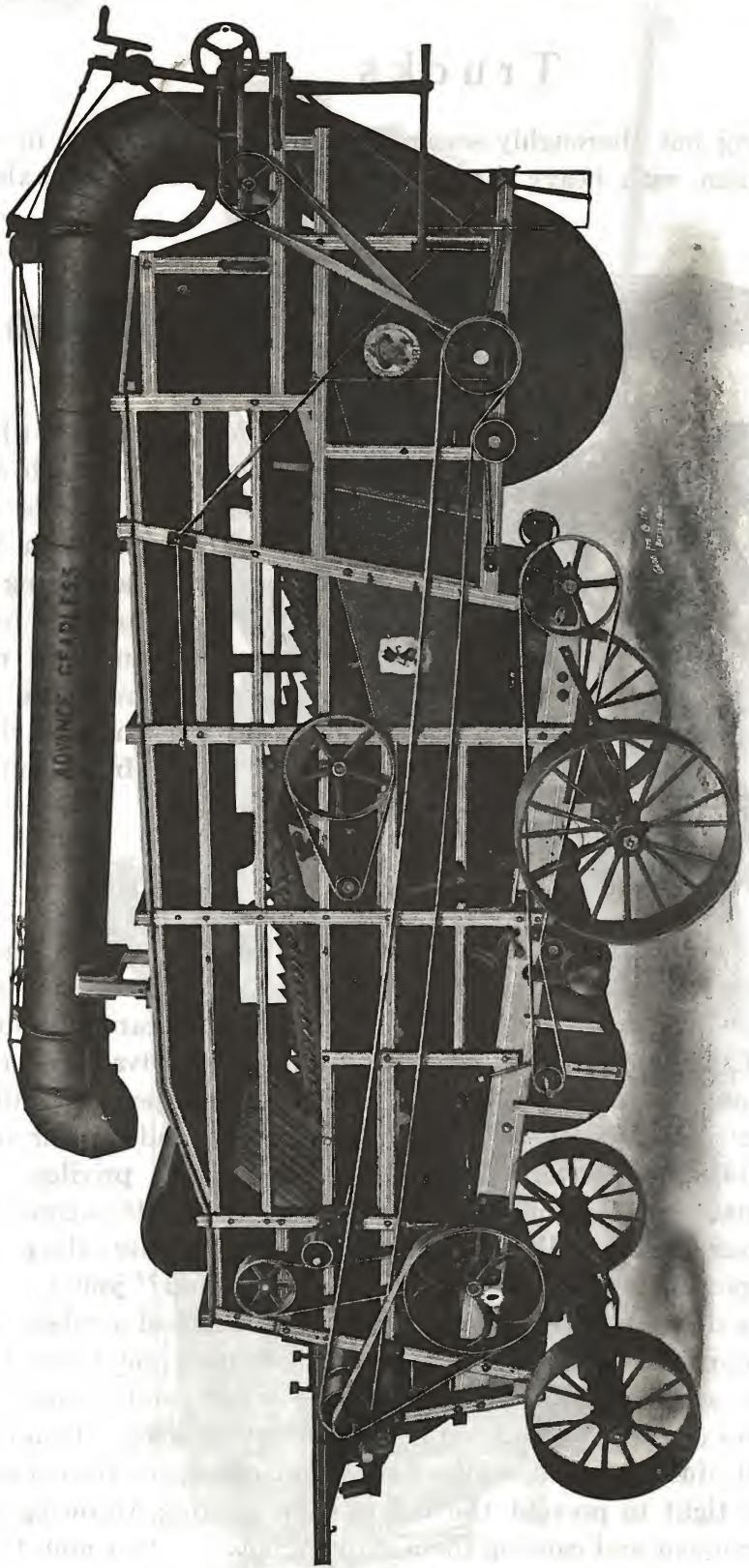
We use nothing but thoroughly seasoned and selected hickory in our axles and fit them with heavy 4 x 12 steel skeins. The front axle is



fastened to the separator with a ball socket bearing and reach and is well trussed. The wheels are of steel with the rims from five to ten inches wide according to the size of the separator; the front wheel has fourteen and the rear sixteen spokes; the hubs are fitted with oil tubes and also rings to prevent mud from getting into the bearings.

## Frame

The frame of a separator is a most important feature, for without a good substantial frame, no matter how good a thresher, it will not last long enough to pay for itself from its earnings. This should be carefully noted by purchasers of threshing machinery. The frame of the Advance is made of thoroughly seasoned, carefully selected hardwood, of proper proportions throughout. Cutting our timber from our own forests and in our own mill we are enabled to carefully select all our material, a privilege not enjoyed by all makers of threshing machinery. While it costs us considerably more, we make **Main Sills of One Piece**,  $2\frac{3}{4}$  x 7 inches; the girths and posts in proportion, and carefully mortised with "blind" joints. The main sills have a direct bearing upon the bolster by means of a substantial head block of hard wood. A sill made of more than one piece, held together by bolts and screws is always under a strain, and necessitates trusses and braces of various kinds, while the vibration keeps them continually loosened, during the short life of such a machine, and the operator must keep them tight to prevent the frame from sagging, throwing the boxes out of alignment and causing them to run hot. A two and three piece sill is no stronger than its weakest part. Every wood joint in the



Advance Shaker Separator  
With Gearless Wind Stackers—Skeleton View

Advance frame is securely bolted, and there is not a separator made whose frame is as stiff, as strong, so carefully made, or will stand the strain of threshing so well. The bolsters are of seasoned hard wood and secured to the frame in a substantial manner. The Advance frame is perfectly rigid, will stand all the strain that may be put upon it, and will outwear any frame made by manufacturers of threshing machinery. The **cylinder** in the Advance is located directly over and the **weight is on the front bolster**, and **not upon the frame as in many separators.**

## Grain Pan

The grain pan is made of selected wood and well braced. It is driven by two pitmans, and its shape and motion is such that the grain and chaff are quickly carried to the sieves and not allowed to accumulate several inches deep on the pan. We provide an exceptionally strong crank shaft to drive the grain pan, extra wide pitmans with ample bearing surfaces on the shaft, and hard oilers on the crank shaft end. The upper end of the pitmans are fastened to the grain pan by cold rolled shafting which runs through both pitmans and is securely bolted to the bottom of the pan, positively insuring the alignment of both pitman shaft and crank shaft.

## Chaffer

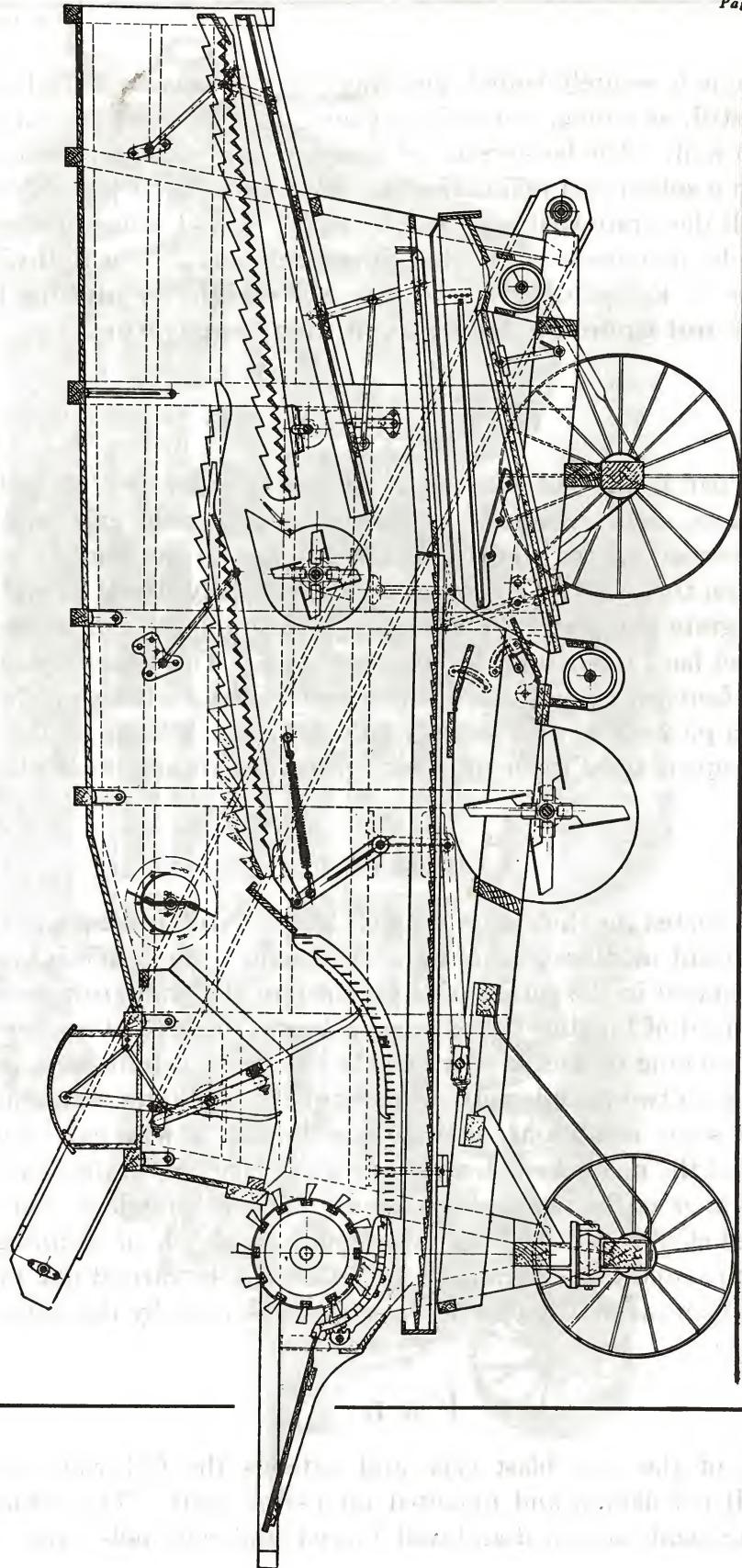
We have adopted for the season the well known **No Choke** chaffer with several important modifications of our own design. The frame is made of hard wood, braced in the corners and fastened to the grain pan by large hinges. Instead of hinging the extension, as was formerly done, we have provided a fastening by means of which the extension can be removed by merely loosening two thumb nuts, which greatly facilitates changing the sieves. For some conditions of grain, we furnish a wire extension, to use in place of the no choke extension, which is fastened to the chaffer in the same manner as the regular extension. We are confident that with our improved chaffer and the two extensions a good job of cleaning can be done in any condition of grain, as all litter will be carried out on the extension, which materially lessens the work to be done by the sieves.

## Fan

The fan is of the over blast type and extends the full width of the machine. It is balanced and mounted on a steel shaft. The blades are of wood, thoroughly seasoned and well braced and will not warp out of

ADVANCE THRESHER COMPANY, BATTLE CREEK, MICHIGAN, U. S. A.

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Advance Shaker Separator — Sectional View

shape. The fan housing is of steel and has adjustable inlet openings. The fan is driven by a leather belt on each side of the machine and creates an exceptionally strong blast.

## Wind Boards

At the discharge opening of the fan are two wind boards, an upper and a lower. By the proper adjustment of these, which is easily and quickly accomplished from the outside of the machine, the blast may be directed through the sieves with even intensity the full width of the shoe; or, if desired, may be made stronger on one side than on the other by adjusting the doors at the inlet of the fan.

## Shoe

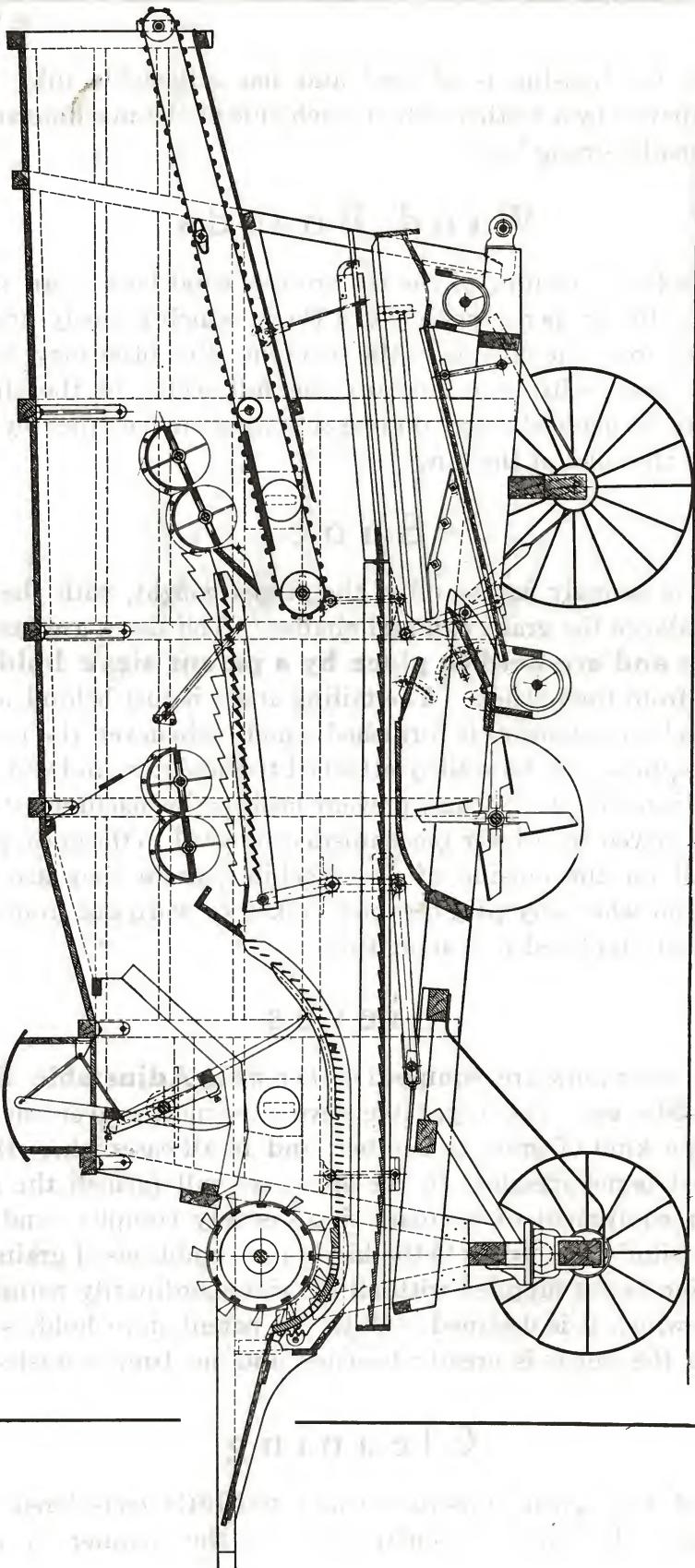
The shoe is strongly made and of the proper weight, with the sieves in, to counterbalance the grain pan and chaffer. The sieves are easily put in or taken out **and are held in place by a patent sieve holder** which is operated from the outside. The tailing auger is just behind and under the shoe, and an extension is furnished which, whenever the condition of the grain requires, can be readily attached to the sieves, and will carry any coarse stuff into the stacker and prevent loading the machine with tailings. The shoe is driven by a lever mechanism connected to the grain pan. The parts are all on the outside of the machine where they are the most accessible, and when any part becomes broken or worn out from any cause it can be easily replaced in a short time.

## Sieves

Advance separators are equipped either with **Adjustable Sieves or Ordinary Sieves.** The adjustable sieve is the most convenient in changing from one kind of grain to another, and in all cases where the kind of sieve desired is not specified in the order, we will furnish the adjustable sieve. Our equipment of ordinary sieves is very complete and varies in different territories according to the kinds and conditions of grain threshed, each machine being supplied with all the sieves ordinarily required in the locality for which it is destined. With our patent sieve holders the work of changing the sieves is greatly lessened and no time is wasted on that account.

## Cleaning

This is of very great importance and too little considered by many threshermen. We take particular pride in the manner in which our



Advance Beater Separator - Sectional View

machine cleans and saves the grain. Owing to the construction and movement of our shoe, with slight attention to the adjustment of the wind and the proper sieves, or proper adjustment of the "adjustable" sieve, the owner of an Advance separator will have no cause for complaint and will have nothing but praise from all his customers. **Oftentimes farmers employing Advance machinery are able to market their small grain at from one to two cents per bushel better price than their neighbors can obtain for grain threshed by other machines.**

## Dimensions of Advance Separators

AS BUILT FOR 1909

Length of Cylinder	Width of Separator	Sizes of Sieves	Length of Cylinder	Width of Separator	Sizes of Sieves
*24 in.	40 in.	35½ x 48	32 in.	56 in.	51½ x 48
*28 in.	40 in.	35½ x 48	36 in.	56 in.	51½ x 48
*30 in.	44 in.	39½ x 48	36 in.	60 in.	55½ x 48
*30 in.	48 in.	43½ x 48	40 in.	60 in.	55½ x 48
*32 in.	48 in.	43½ x 48	40 in.	64 in.	59½ x 48
32 in.	52 in.	47½ x 48	44 in.	64 in.	59½ x 48

\*The sizes marked with a \* are made with bevel gears for horse-powers if wanted. Cylinder pulleys of various sizes are carried in stock to accommodate the various makes of engines.

## Information

With each separator we include feed tables, feeder stand (except as noted below), whiffletrees, neckyoke, pole, tooth wrench, tooth straightener, wrenches and extra teeth and all belts except the main belt from cylinder to engine.

No allowance will be made where the ordinary stacker is not taken.

Where self-feeders are attached to separators, and hand-feed attachments are furnished, an extra charge of \$10 will be made.

## Shaker Separator

**I**N THIS age of competition, there is a demand for a machine that will handle the largest quantity of grain, and at the same time clean it perfectly. Years ago we demonstrated by thorough trials that the so called "big cylinder" would not accomplish what is claimed for it, and the present standard size of cylinders is the result of the combined experience of threshermen and all manufacturers since the days of the earliest mechanical thresher.

While we were loath to alter our machine that had given such general satisfaction in separating and cleaning, and had made records for fast threshing unequaled by any other, in 1903 we completed our **Shaker Separator** and placed it in all grain growing districts.

In general appearance and construction the shaker is the same as the beater machine, the difference being in the method of handling the straw after it passes the grates; a comparison of the two sectional views will show this difference. In the shaker machine, it will be seen that after leaving the grates the straw is taken by a shaker and carried about half way through the machine when it drops from the first to a second shaker. By a peculiar arrangement of the pitmans and supporting links the shakers are made to carry the straw through the machine in a thin, even layer, thoroughly shaking it so that all the grain will drop out. The motion of the rear shaker, is slightly faster than that of the front shaker, and the straw is carried over it more rapidly and in a thinner layer, and any grain remaining in the straw after passing over the first shaker will drop out before reaching the end of the machine.

Directly under the rear of the front shaker is **an auxiliary fan**, made similar to the main fan. It has a housing of steel and is mounted upon a large steel shaft. By adjusting the wind boards of this fan a blast is forced through the straw as it drops from the front to the rear shaker, floating all the chaff and light straw upward and rearward and greatly facilitating separation. We have found it far superior to any rear end picker or similar device.

## **Beater Separator**

**W**HILE we have built and put into the field a **shaker separator** which **has achieved the greatest success ever attained by a mechanical thresher**, we must not lose sight of the fact that the **beater machine** has set the pace for all others since it was first put in the field. Up to the advent of our shaker separator, the world's records for threshing all kinds of grain were made with Advance beater separators, and the marks were set so high that no other make of separator ever approached near enough to make us feel uncomfortable. While many makes of machines will apparently do a large amount of work if no attention is given to the amount of grain wasted, or to the cleaning, **our world's records were obtained for the quantity of grain threshed, and at the same time awards were received for excellent cleaning**—these records mean something, and we are justly proud of the fact that the Advance beater has done this and stands

today **without a peer.** With this reputation made in threshing all kinds of grain, our beater machine has many friends. While we make and recommend our shaker separator we have not abandoned the manufacture of our beater machines and are in a position to furnish them when desired. Those parts common to both shaker and beater machines have already been described and it remains for us to but briefly mention a machine that is too well known to need an extensive description.

**On referring to the sectional cut of the beater machine it will be seen that the straw, on leaving the grate, is deposited on a shaker and a set of beaters, where it is thoroughly shaken and beaten up, and then delivered to a second set of beaters which still further agitate the straw and then deliver it to a raddle which carries it to the rear of the machine and deposits it in the stacker.**

The shaker is made of hard wood, strong and light, and has a movement which imparts a quick, lively motion to the straw.

## Advance Wind Stacker

**T**HE regular equipment for the coming season is the **Advance Gearless Wind Stacker.** In this type of stacker the drum stands vertically on the right hand side of the separator and the fan and drive pulley are mounted on the same shaft so that the drive is direct from the cylinder shaft with an open belt. A handy tightener insures a tight belt at all times. The shaft is of large dimensions and will not spring. There are two large boxes on the fan shaft, cast solid in a frame bolted to the frame of the stacker and braced by an adjustable brace which insures perfect alignment. All boxes are fitted with hard oilers, and friction is reduced to a minimum. The stacker is made with the fewest number of parts and is much lighter and easier running than any other style of stacker.

## Oscillating Device

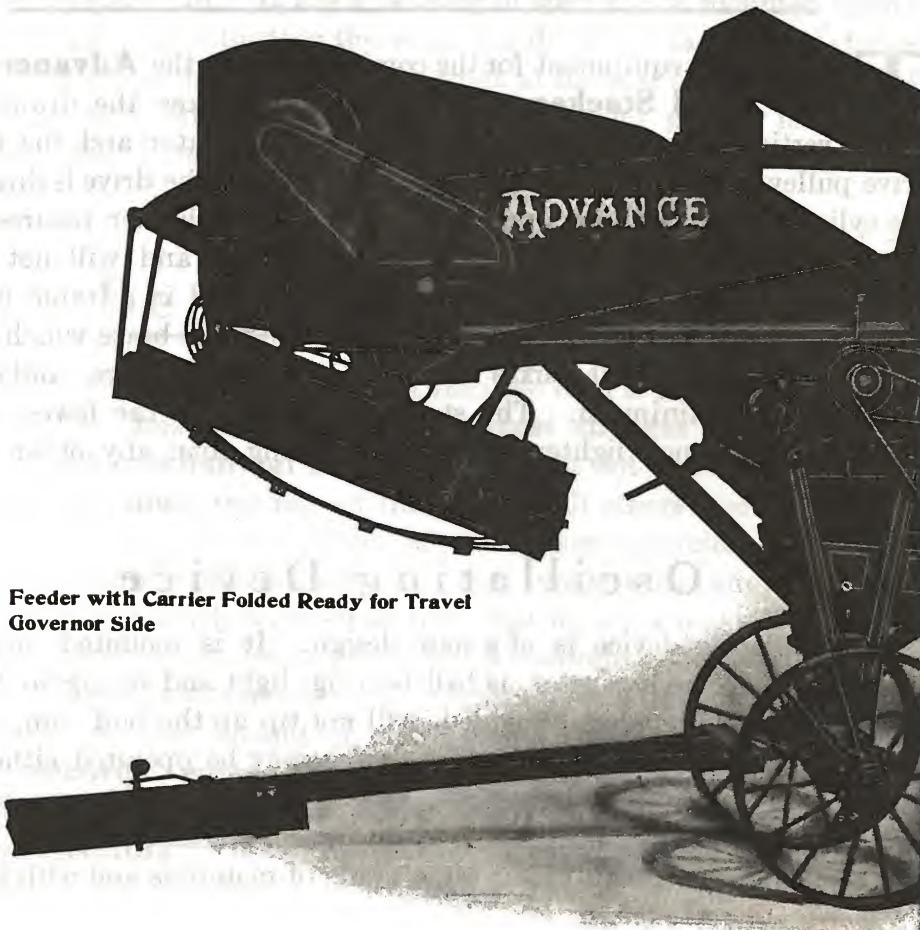
The oscillating device is of a new design. It is mounted on a frame near the top of the separator, is ball bearing, light and strong so that the weight of the chute when extended, will not tip up the bull rim, and get it out of mesh with its pinion. The device may be operated either automatically or by hand, and the chute raises and lowers and turns a complete circle which allows the operator to build perfect stacks of any size desired. The stackers are all built of the same grade of materials and with the same

care as the balance of our machinery. The frame is hard wood, mortised and bolted together and built to make a perfect fit with the frame of the separator.

The chute is as light as is consistent with strength and safety. The fan blades are made of No. 10 gauge steel, securely fastened to a spider of new design. Every fan is balanced before being placed in the stacker. We believe the Advance Gearless to be the lightest, easiest running stacker ever placed upon the market.

## **Advance Band Cutter and Feeder**

**A**BAND cutter and feeder is an indispensable attachment to a separator if the machine is to be operated at its maximum capacity and consequent profit. It is recognized that a good band cutter and feeder will do more and better work than can be done by hand and it does not require an expert to pitch the grain upon the carrier. There is nearly as much difference in the capacity of the feeders on the market as there is between the self feeder and the hand feeder. We were the first to



**Feeder with Carrier Folded Ready for Travel  
Governor Side**

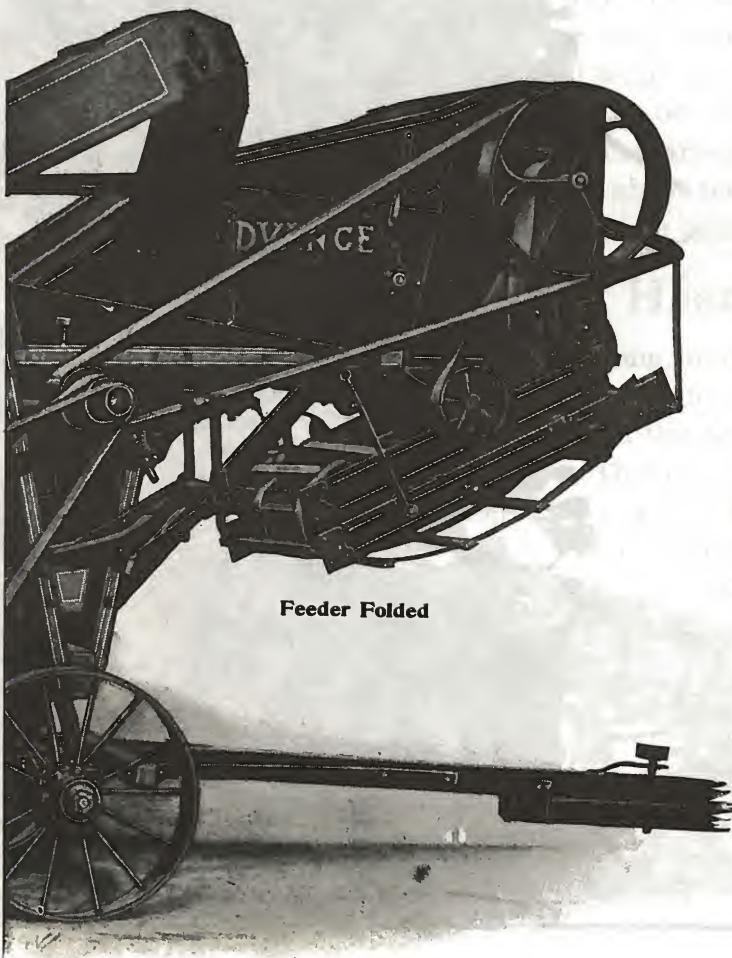
manufacture self feeders and our feeder is unlike any other although it has many imitators. It delivers the bundles to the cylinder in exactly the same place and manner as in hand feeding. This is something no other feeder will do, and is an important factor to threshermen from the stand-point of economy and quality of work. The **Feeder Pans thoroughly break up the bundles and spread them out in a manner almost human**, and the governor is so sensitive that it is almost mysterious in its action. The use of a feeder requires no change in the construction of the front end of the separator, and its method of attachment is simple, yet very strong, and it is easily detached. Our feeder is built primarily for use with our Advance separators, and when so used will do more and better work than any combination manufactured.

Marked improvements in the construction of the feeder pans and the arrangement of the carrier for the coming season makes our feeder the cleanest in operation, and one that will do its work with less litter than any other make. The Advance feeder has a capacity for taking all the grain that is thrown on the carrier; others are limited in their

capacity and throw off what they cannot take.

**It will handle the maximum capacity of any separator on the market with ease; but there is no other feeder that can handle the maximum capacity of the Advance separator; they simply refuse to take more than they can handle, which is but a small percentage of the capacity of the Advance.**

Its construction and appearance shows the same superiority as our other machinery, and is every way worthy of the trade mark "Advance."



Советская армия  
вступила в Царскосельский  
район. Всё это время  
наши войска  
занимают южные  
и юго-западные

районы Петрограда.

Сейчас же наше

войско вступило

в Сестрорецк и

захватило



The Advance tearing up the Steppes of Russia

## Main Body

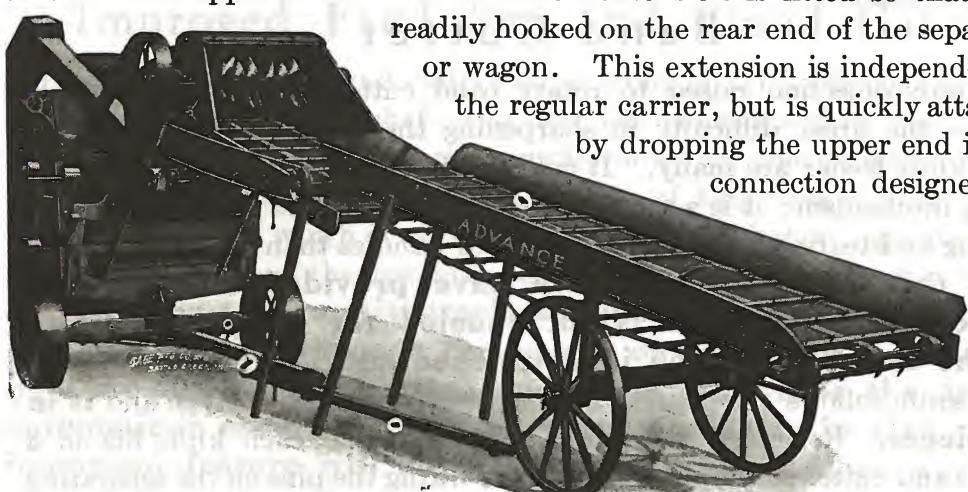
The main body of the feeder is wood and the inside is lined with sheet iron. The deck is very strong; the doors hinged and held down by a hasp. The feeder body fits over the yoke of the separator and is fastened to the same by strap bolts and, in addition, by wrought iron braces which are securely bolted to the sides of the feeder and separator frame.

## Bundle Carrier

The bundle carrier is made in four different lengths to suit varying conditions, and each carrier is made in two sections to permit its being folded under the feeder body when moving. On the short carrier (6 feet 6 inches long), which length will allow it to swing under and miss the pole, we have attached the side boards permanently, making it much more convenient when moving. On the other lengths of carriers, however, the medium (8 feet 10 inches), long (10 feet 4 inches), and the extra long (13 feet 8 inches), it is necessary that they fold together so that it is impossible to fasten the side boards permanently to the carrier. The carrier is fastened to the feeder with malleable iron hinges, and when extended ready for operation, is quite close to the ground which is a decided advantage in cleaning up or when pitching from low stacks or ricks. On the lower end of the bundle carrier is a ratchet and gear arrangement, by means of which slack in the raddle, to the extent of about ten inches, may be taken up, in addition to the adjustment in the raddle belts themselves.

## Extension Carrier for Headed Grain

We make an extra carrier, fourteen feet long, mounted on a two wheeled truck. The upper end of this mounted extension is fitted so that it is readily hooked on the rear end of the separator or wagon. This extension is independent of the regular carrier, but is quickly attached by dropping the upper end into a connection designed for

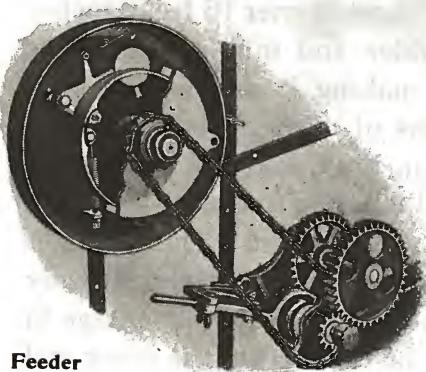


it at the lower end of the regular carrier. The extension carrier is driven from the raddle shaft of the regular bundle carrier and consequently comes under the regulation of the governor. It is fitted with the same arrangement for tightening the belt as the regular bundle carrier.

### **Feeder Governor (Lafever Patent)**

The governor controls the speed of the raddle shaft and its regulation is so close and its action so quick that a variation of two per cent less than normal in the speed of the cylinder will cause the governor to act and stop the raddle shaft, which allows the cylinder to regain its speed and prevents continuous slugging. In construction, the governor is very simple, having fewer moving or wearing parts than any other make.

It consists of an expansion ring inside a wood lined disc containing a driving sprocket; one end of the expansion ring is fastened to a stud and the other to a weight, which in turn is attached to a spring. The arrangement of these parts is such that a very slight movement of the weight expands the ring against the wood lining of the disc and throws the raddles into action. The spring and weight are so nearly balanced



**Feeder Governor**

that a wide adjustment is possible and still an extremely close regulation is maintained. The speed of the raddle shaft may be changed to either fast or slow **without stopping the machine or interfering with the working of the governor.** The governor is absolutely positive in action, and the transmission gear between the governor and the raddle shaft is protected by a neat case.

### **Band Cutter**

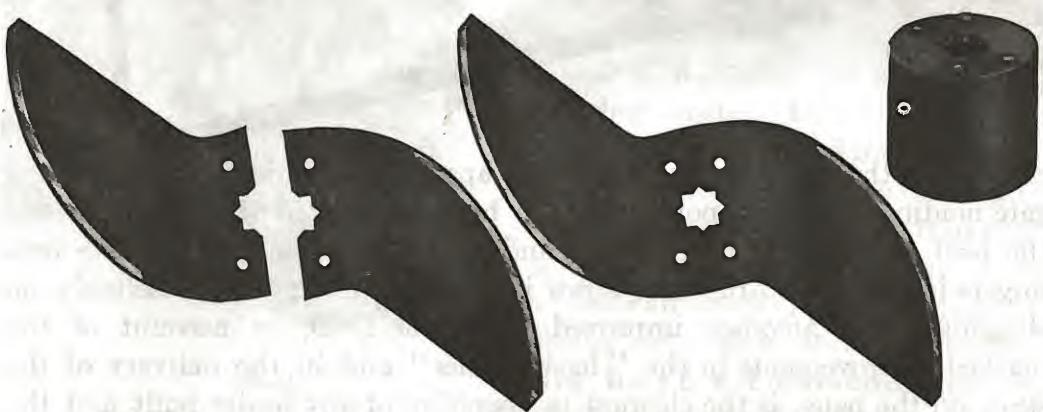
The only objection raised to rotary band cutter knives, as commonly used, is the great difficulty in sharpening them. The advantages of a rotary knife feeder are many. It delivers the straw more regularly to the feeding mechanism; it is a much better band cutter and more efficient in breaking and tearing apart wet and tangled bundles than other types.

**For the season of 1909, we have provided a detachable band cutter knife which is not equaled for simplicity, safety and the ease with which it is attached and detached.**

The knife follows the general outline of our well known type and **is in two pieces.** Reference to the cut will show that each knife fits on a square band cutter shaft and has two holes fitting the pins on the separating

collars, which, together with the friction on the collars and the knives when the nut is screwed up tight, makes a triple and positive drive for the knife.

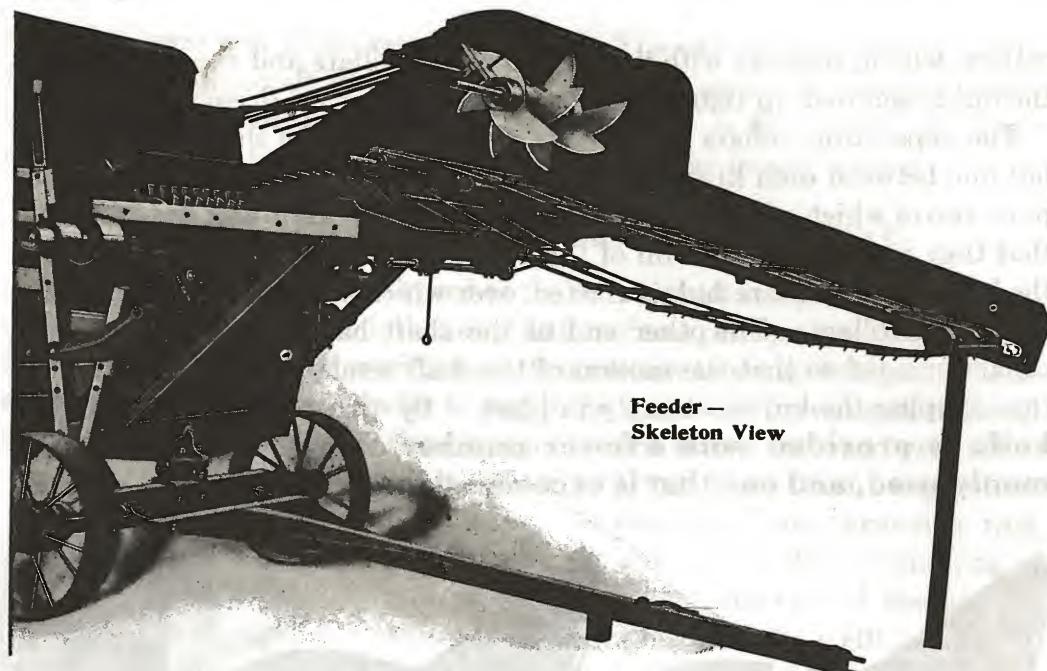
The separating collars are of cast iron fitted to the shaft, and there is but one between each knife. On one end of each separating collar are four pins, two of which project through one blade of the knife and are located so that they come inside the rim of the adjoining collar. On the left end of the knife shaft a square hub is riveted, over which a collar fits similar to the separating collars. The other end of the shaft has a thread on it, and a collar threaded so that the motion of the shaft tends to force it on tighter thus keeping the knives securely in place. By this means **a detachable knife is provided with a fewer number of pieces than is commonly used, and one that is exceedingly strong, rigid and simple.**



To further aid in the simplicity of our feeder we have adopted a guard for the knives that is attached to the knife cover which is hinged to the deck. This can be thrown back and the knives are readily accessible.

### **Improved Feed Pan and Flood Gates**

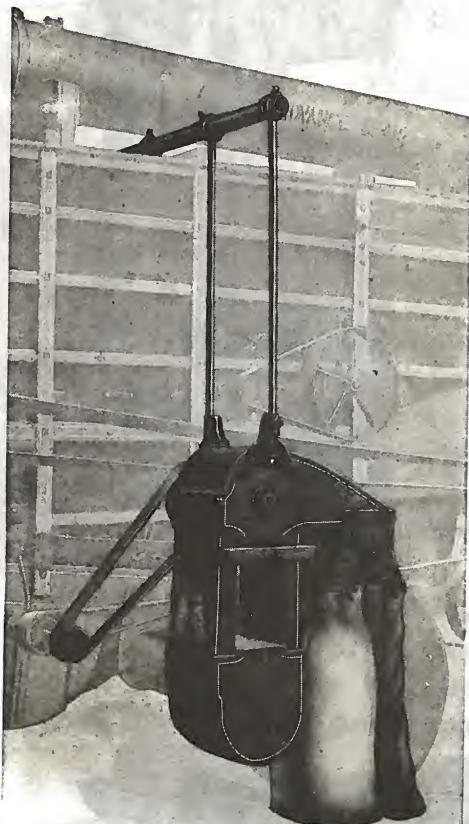
Directly back of the band cutter and in front of the cylinder two pans are mounted on a crank shaft, and over the pans is a flood gate. The purpose of this gate is to hold the bundles down on the feeder pans and insure their thorough separation. It is made of long rods of spring steel fastened to a shaft which is operated by a lever working on a quadrant, by which the position of the gate may be varied to suit bundles of different size. **To the quadrant is attached a spring of suitable tension—a patented device—through the agency of which the gate fingers hold the bundles on the pans, and at the same time the gate is automatic in caring for bundles varying slightly in size. This important feature will be found in no other feeder.** The pans work alternately to each other on a crank shaft, catch the bundles as they



come from the band cutter, tear them apart from underneath (the flood gate holding the upper portion of the bundle), spread them evenly over the feed board in front of the cylinder, and corrugated malleable iron fingers in the pans thrust the straw into the cylinder with absolutely no slugging. The Advance improved feeder for 1909, on account of the marked improvements in the "feeder pans" and in the delivery of the straw on the pans, is the cleanest in operation of any feeder built and the most perfect mechanical feeding device ever produced for use on a separator. **It has no equal for capacity.** When combined with an Advance separator the two will do more work, and better, than any combination manufactured. Access is obtained to the cylinder by removing a nut which holds the pan shaft bracket to the supporting arms of the feeder, and allows the pans to swing down out of the way of the operator and furnishes ample working room at the cylinder. This is a very simple and convenient arrangement, saves time and does away with lifting and shifting the whole feeder.

## Registers, Measures, Weighers, Baggers and Elevators

**W**E MAKE a number of different types and styles of baggers to suit all conditions of threshing. Our elevators are of one general type, a combination of wood and steel. The main framework of the legs and heads is of wood to insure stiffness; and the sides of



Illinois

**to keep it in first-class working order.** Our new bag holders are simple and convenient and so designed that the weight of the grain is on the ground and not upon the bag holder, which relieves the holders of all strain and makes them more durable.

### **Illinois Bagger**

Our Illinois bagger consists of a short elevator, tally and bag holder. It is suspended from a shaft running across the top of the separator and can be handled from the ground.

### **Himes Bagger and Weigher**

Our Himes bagger and weigher consists of a short elevator, a weigher (Forsythe patent) and a bag holder. The bagger is suspended from a shaft which runs across the top of the separator and is easily handled from the ground.

the legs and the covers of the heads are of steel. The unqualified success of our baggers has demonstrated that this form of construction is far superior to that of the tubular form. **It is impossible to jam our bagger so that the elevator will not do its work, and it possesses sufficient rigidity to insure the correct relation with the weighing parts.** Advance weighers are of the well known Forsythe patent type, which is without doubt the simplest, most accurate and reliable weigher made. The weigher consists of a drum, divided into two compartments suspended from the weighing beam, each compartment having a capacity of one-half bushel. It is entirely automatic in its operations of filling, dumping and registering. **Its best recommendation is that no expert is ever required**



Registers  
Measures  
Weighers  
Baggers and  
Elevators

Himes



Herald



Handy



Iowa

## Herald Weigher, Bagger and Wagon Loader

This is a combined weigher, bagger and wagon loader. The weigher is the same as is used on the Himes (Forsythe patent) and the elevator is hung from a gas pipe which runs across the top of the separator and may be swung up out of the way when moving. Across the top of the separator is a conveyor connected to a hopper directly under the weigher drum, and on either end of this conveyor is a casting to which a short open spout may be attached for delivery into a wagon or a long closed spout with a bag holder on the lower end. With this arrangement, it is possible to bag or load the grain from either side of the separator by simply shifting a lever on the conveyor, which may be done from either side of the machine, and is a great convenience to the busy thresherman.

Without the weigher we designate it "Iowa."

**For some territories, we are furnishing, when specially ordered, a swinging bag holder which enables the operator to bag at different positions and distances from the machine.**

## Handy Weigher and Bagger

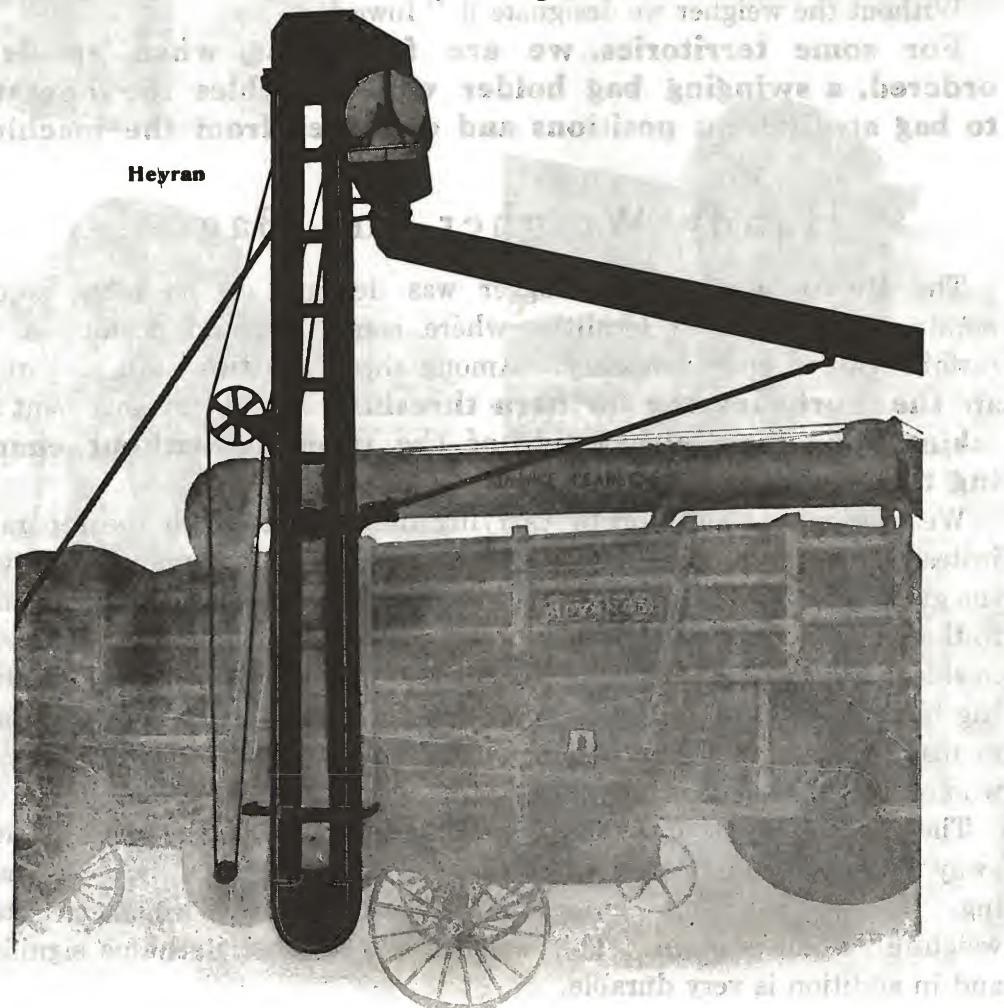
The Handy weigher and bagger was designed to meet the special requirements of those localities where conditions and customs made certain features very necessary. Among these, the two most important are **the short elevator for barn threshing** and the arrangement for **taking grain from either side of the machine without changing the bagger**.

We shorten the elevator by carrying the grain through the separator instead of across the top and, by simply throwing over a small hand lever, the grain may be turned into the conveyor and carried through the machine to the opposite side, making it unnecessary to change the bagger from side to side as the delivery spouts on each side of the machine have individual bag holders. This saves considerable heavy lifting and the time consumed in making changes, and is of great importance to the busy thresherman whose time is money.

The use of an auger for conveying the grain through the machine does away with chains and saves annoyance and expense caused by their breaking. The weigher is our regular Forsythe patented device which accurately weighs all kinds of grain. This weigher is just what its name signifies, and in addition is very durable.

## Heyran and Dakota

For use in the Northwest and territories where grain is delivered into tank wagons, we make an extra long elevator with or without a Forsythe weigher. The elevator is sufficiently high so that the wagon loading spout may be swung over to deliver grain on either side of the machine. To hold the spout in position, a wrought iron band is riveted around it, to which is fastened a rod sliding in a gas pipe secured to a turntable on the elevator with a set screw. The spout is very large to prevent its clogging in wet grain and there is a door on the end which may be closed over the spout when swinging from one wagon to the other. **With the weigher attached**, we designate this "**Heyran**"; and **without, we designate it "Dakota"**. They are braced by suitable iron rods which allows moving over rough roads with the elevator in position. We have this year added a countershaft on the deck of the separator and the belting is in no wise affected by strong winds.





**N**O MACHINE made for farm work will pay larger profits to the thresherman than the Advance husker-shredder.

The value of shredded fodder has been so widely advertised that nearly every farmer in the corn growing states recognizes the value of shredded fodder as a "feed". It has a much higher nutritive and fattening value than is realized by those who judge its value from results obtained in feeding whole stalks. Then again, on account of its compact form, it requires only about half as much storage room as whole stalks.

Every year creates a larger demand for the work of this machine. Any thresherman can just as well increase the working season of his engine with but a little increase in the capital invested, by equipping himself with an Advance husker-shredder.

Our machine is built along the same substantial lines as our separators, and we give particular attention to the production of a machine that will husk clean and fast, shell but very little, bag all that is shelled, and stow away the shredded fodder in a neat and compact form, free from all shelled corn. We are able to do this for the reason that our machine contains many patented devices which we have especially adopted. No other husker has them.

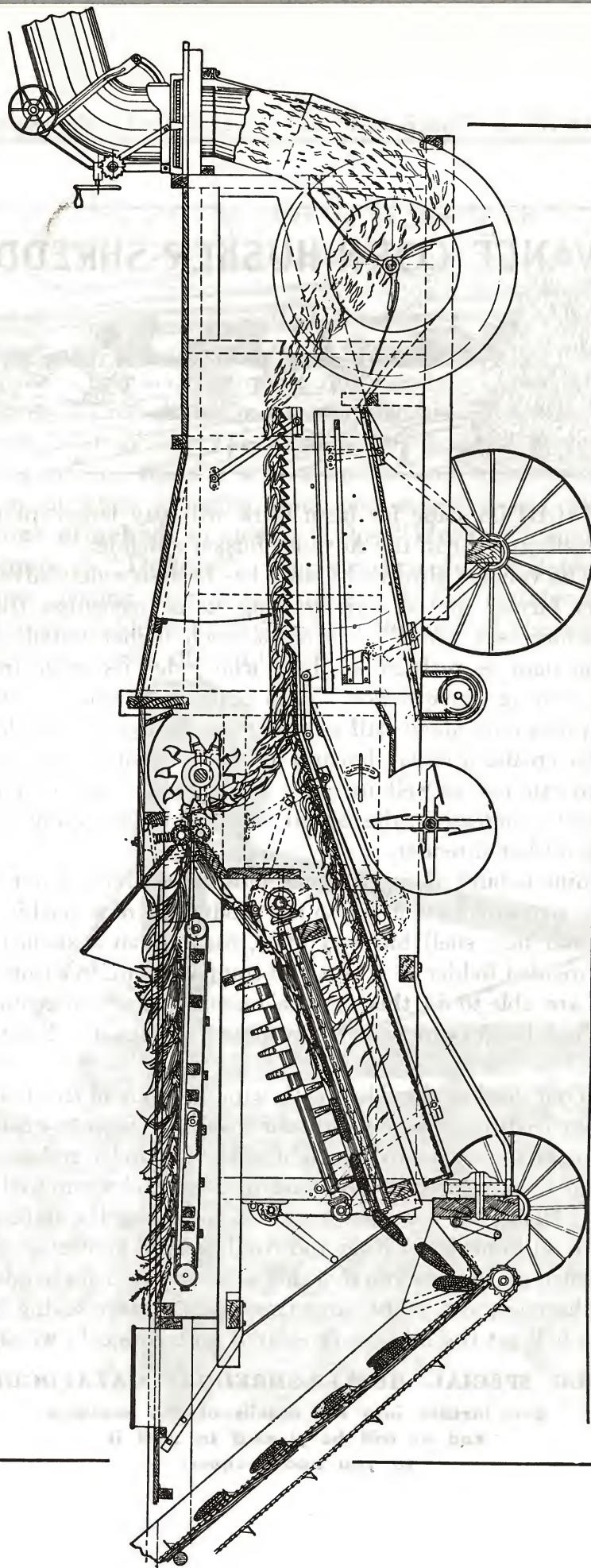
We equip our husker-shredders with wind stackers of the latest gearless type, and our feeding device renders our machine absolutely safe in operation. We make two sizes only, an eight roll and a twelve roll machine, and owners of our husker-shredders are husking from twelve hundred to twenty-five hundred bushels of corn per day, and shredding the stalks; they are doing this in all kinds of weather and conditions of fodder.

A little figuring will show you that this will easily return a handsome profit to the thresherman, and at the same time make a large saving for his customers, and will get the farm work cleared up before cold weather sets in.

#### OUR SPECIAL HUSKER-SHREDDER CATALOGUE

goes further into the details of this machine  
and we will be pleased to mail it  
to you upon request

Sectional View of Advance Husker-Shredder with Gearless Stackter



## **Our Broad and Ample Warranty**

**A**SK to see the warranty which is given with all goods sold on our order blanks or rather drop us a card and we will furnish you with full information concerning the merits of Advance machinery. Our prices are as low or lower than those of other standard makes of machinery, and an investment in an Advance outfit will prove a source of great profit to you. Carefully study our catalogue and then look our goods over from top to bottom. Remember that whenever you are in the vicinity of any of our warehouses we want you to make them your headquarters. You will find you are welcome and our men will show you every courtesy. We are sure they will please you. If there is no distributing house in your state, write to the factory and you will be furnished all the information desired.

## **To Our Canadian Trade**

**O**WING to the constant and ever increasing flow of settlers to the Canadian Northwest, the demand for Advance machinery has increased rapidly in this territory and we have carefully considered and satisfactorily settled the question of how best to supply this demand. Co-operating with the Minneapolis Threshing Company, we formed what is now known as the American-Abell Engine and Thresher Company, and purchased the John Abell & Company plant at Toronto, Can. This has been thoroughly overhauled, modern machinery installed and additions made, increasing and bettering its facilities, until now it is fully equipped to build first-class machinery. The new company has built warehouses at Winnipeg and Regina, Manitoba, and other points in the Northwest where they carry a full line of Advance machinery and have established selling agencies throughout Canada where Advance machinery may be purchased, either of American or Canadian make, and where repairs can be had without the delay of sending to the factory. From these, we supply all of our old friends who have sought homes in the new country as well as our many Canadian friends, and we feel confident that our goods have earned a reputation that will result in securing for us a share of the new trade that develops each year.

If you desire machinery manufactured in Battle Creek, Mich., U. S. A., write to the American-Abell Engine & Thresher Co. at Toronto, Ontario, Can., Winnipeg or Regina, Manitoba, or direct to Advance Thresher Company, Battle Creek, Mich., U. S. A.

## Advance Novelties

**W**E WANT any one in the market for anything in our line to send his name and address or give us the name and address of some friend who is in the market for threshing machinery of any kind, and we will send free of charge our large lithographed **Presidential Poster**. This has been prepared by us at a great expense and will prove instructive in the home. We will also send to threshermen (free) one of our **souvenir match boxes**, with a picture of our engine on one side and our banner boy (trade mark) on the other.

We also furnish **Advance playing cards** for fifteen cents a pack and two cents additional for postage or two packs for twenty-five cents and four cents postage. These cards are of a new design which has been made for us at a great cost by the best card manufacturer in this country and are pronounced the most satisfactory card ever issued. We guarantee these cards equal to any twenty-five cent card on the market and superior to the majority of cards sold at that price.

## Special Information

**W**E ISSUE a special Husker-Shredder catalogue; also special Saw-Mill circulars and, if interested in either subject, we wish you would send for a catalogue or circulars.

Remember that our prices are as low as is consistent with the quality and actual building cost of the machinery, and in comparing them with other prices it should be kept in mind that the first cost to you does not determine the cheapness of the article. When you buy machinery you are making an investment and the profits from it will depend upon the quality of the machine, not its first cost. Machinery that will do good work, the most work, last the longest and cost the least to keep in repair and operate, is the kind of machinery that makes an investment a paying one and that is cheapest in the end; poor machinery is cheap at first but dear ever after.

We put good value into our machinery, treat our customers with all fairness and, upon these principles, have built up a business of which we are justly proud. Our customers are our friends and their success is ours.

Very truly yours,

**Advance Thresher Company**



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